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EXPERIMENTAL HINGELESS ROTOR CHARACTERISTICS AT LOW ADVANCE RATIO WITH THRUST

by R. J. London, G. A. Watts, and G. J. Sissingh
December 1973

Prepared under Contract No. NAS2-7245, by
LOCKHEED-CALIFORNIA COMPANY
Rotary Wing Division
Burbank, California

for

U. S. ARMY AIR MOBILITY RESEARCH AND DEVELOPMENT LABORATORY
AMES DIRECTORATE

and

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AMES RESEARCH CENTER

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SUMMARY

An experimental investigation to determine the dynamic characteristics of a hingeless rotor operating at moderate to high lift was conducted on a small scale, 7.5-foot diameter, four-bladed hingeless rotor model in a 7 x 10-foot wind tunnel by the Lockheed-California Company for the Ames Directorate of the U. S. Army Air Mobility Research and Development Laboratory.

The primary objective of this research program was the empirical determination of the rotor steady-state and frequency responses to swashplate and body excitations. Collective pitch was set from 0 to 20 degrees, with the setting at a particular advance ratio limited by the cyclic pitch available for hub moment trim. Advance ratio varied from 0.00 to 0.36 for blades with nondimensional first-flap frequencies at 1.15, 1.28 and 1.33 times the rotor rotation frequency. Several conditions were run with the rotor operating in the transition regime, μ = 0.00 to 0.10, and rotor response at high lift is shown to be generally nonlinear in this region.

As a secondary objective an experimental investigation of the rotor response to 4/revolution swashplate excitations at advance ratios of 0.2 to 0.85 and at a nondimensional, first-flap modal frequency of 1.34 was also conducted, using the 7 x 10-foot wind tunnel. It is shown that 4/revolution swashplate inputs are a method for substantially reducing rotor-induced, shaft-transmitted vibratory forces.

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INTRODUCTION

This report presents data obtained in the fourth of a series of related tests of a 7.5-foot-diameter, four-bladed hingeless rotor, conducted in the Army-Ames 7 x 10-foot wind tunnel. These tests have ranged over conditions applicable to conventional helicopters as well as to slowed-rotor, compound vehicles. The objective of the latest test was to expand the data bank to high-rotor lift levels at low advance ratios.

The objectives of the first two tests of the series were to experimentally determine the stability and response characteristics of a conventionally-controlled hingeless rotor at high advance ratios and low lift levels, and to evaluate the applicability of an existing mathematical model by correlation with the test results. In the first test, the rotor response to steady swashplate and rotor angle-of-attack inputs was determined in hover and up to an advance ratio of 2.15. Several hub configurations, with varying Lock numbers and first-flap frequency ratios, were used; however, many of the configurations employed the high flap stiffness meant for application to slowed-rotor vehicles. The results of the investigation are reported in Reference 1.

Rotor frequency responses to swashplate cyclic and collective oscillations were obtained in the second phase of investigation (Reference 2) at the test conditions of the first phase. The test objectives were also extended to include the investigation of the dynamic characteristics of hingeless rotors with hub moment feedback control. Steady-state and frequency-response characteristics were determined during the program.

The objectives of the third phase of testing (Reference 3) were similar to those of the first two with emphasis on adding to the existing rotor data bank. Test conditions of the first two phases were again duplicated while obtaining the rotor frequency-response characteristics to shaft pitch and roll oscillations. A reduced flexure stiffness configuration, more applicable to conventional helicopers, was also initially tested for both steady-state and frequency-response characteristics at low lift levels.

The fourth test, reported herein, expanded the data bank to include test points at higher lift levels at low advance ratio, using the reduced stiffness configuration (Configuration 5) introduced in the third phase. Again, both steady-state and frequency-response tests were performed.

The effects of higher harmonic control as a method of vibration attenuation was studied by G. J. Sissingh and are presented in Appendic C. Both theoretical and experimental results are included.

Many pertinent discussions contained in the documentation of the prior test phases have been repeated herein in abbreviated form or merely referenced. These earlier reports thus form valuable adjuncts of the present report.

SYMBOLS

a	blade lift curve slope
b	number of rotor blades
c	blade chord
C_l	roll moment coefficient, about center of rotation, $C_l = kC_{L_{3.3}}$
C_{L_s}	shaft rolling moment coefficient $C_{L_s} = L_s/\pi R^3 \rho(\Omega R)^2$
C_m	pitch moment coefficient, about center of rotation, $C_m = kC_{M_{3.3}}$
C_{M_s}	shaft pitching moment coefficient $C_{M_s} = M_s/\pi R^3 \rho(\Omega R)^2$
$C_{L_{3.3}}$	hub rolling moment coefficient, at blade station 3.3 inches $C_{L_{3.3}} = L_{3.3}/\pi R^3 \rho(\Omega R)^2$
$C_{M_{3.3}}$	hub pitching moment coefficient, at blade station 3.3 inches $C_{M_{3.3}} = M_{3.3}/\pi R^3 \rho(\Omega R)^2$
C_T	rotor thrust coefficient $C_T = T/\pi R^2 \rho(\Omega R)^2$
E	modulus of elasticity in bending, psi
G	modulus of elasticity in shear, psi
HM	total rotor hub moment, in-lb $HM = \left[(M_{3.3})^2 + (L_{3.3})^2\right]^{1/2}$
I	moment of inertia, in.^{4}
J	polar moment of inertia, in.^{4}

k	ratio of blade first-flap mode bending moment at $r = 0$ in. to blade first-flap mode bending moment at $r = 3.3$ in.
L_s	shaft rolling moment measured 2 in. below rotor plane, + left up, in-lb
$L_{3.3}$	hub rolling moment measured at $r = 3.3$ in., + left up, in-lb
M_s	shaft pitching moment measured 2 in. below rotor plane, + nose up, in-lb
$M_{3.3}$	hub pitching moment measured at $r = 3.3$ in., + nose up, in-lb
P	ratio of blade first flap mode frequency to rotor frequency of revolution
Q	rotor torque
r	blade radial station, ft
R	blade radius, ft
T	rotor thrust, lb
α	shaft pitch angle, + nose up, deg
Δ	perturbation of a load coefficient from a least-squares fitted linear curve
ζ	fraction of critical damping
θ_c	blade lateral cyclic pitch angle, + up at $\Psi = 0^{\circ}$, deg
θ_s	blade longitudinal cyclic pitch angle, + up at $\Psi = 90^{\circ}$, deg
θ_o	blade collective pitch angle, + up, deg
μ	advance ratio, $V/\Omega R$
ρ	air density, lb sec^2/ft^4
σ	rotor solidity
ϕ	shaft roll angle, + left up, deg
Ψ	rotor azimuth angle, deg
ω	oscillator excitation frequency, rad/sec
Ω	rotor rotational frequency, rad/sec

MODEL DESCRIPTION

The Lockheed CL-1080 7.5-foot model rotor, pictured in Figure 1, is relatively simple in design. It is a hingeless rotor with no twist or forward sweep. The conventional swashplate is controlled by hydraulic actuators. Pitch and roll of the body are also controlled by hydraulic actuators.

The stiffness of the hub may be varied by using flexures of different stiffnesses, by which the blades are attached to the hub. Two stiffness configurations were used during these tests. The majority of the testing was done with Configuration 5 ("supersoft" flexure), with the inclusion of 1.75 degrees precone to enhance fatigue life. Configuration 1 ("soft" flexure), which was also tested, did not require precone.

The geometric parameters of the two rotor configurations are listed in Table I. The blade mass and stiffness properties are illustrated in Figures 2 through 8.

TABLE I. MODEL PHYSICAL PARAMETERS

Number of Blades	4
Radius, R	45 in.
Chord, C	4.5 in.
Solidity, σ	0.127
Blade Twist	0 deg
Blade Forward Sweep	0 deg
Blade Precone, Config. 1	0 deg
Blade Precone, Config. 5	1.75 deg
Lock Number ($a = 2\pi$)	5.0
Airfoil Section	NACA 0012
Blade Root Cutout	11.9 in.
Blade Feathering Axis	0.25c
Body Roll Pivot Location	11.25 in. below rotor plane
Body Pitch Pivot Location	11.25 in. below rotor plane

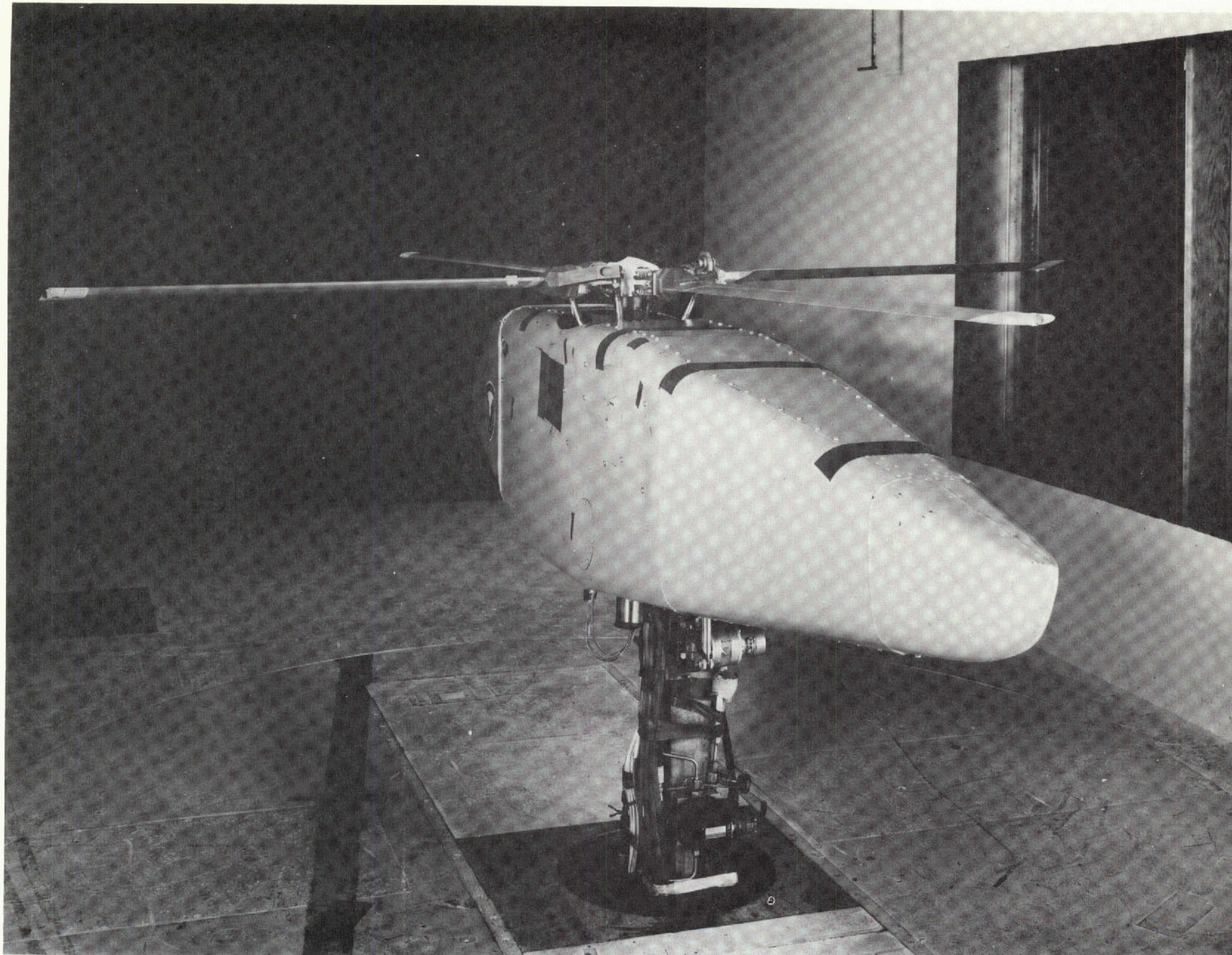

Figure 1. Hingeless Rotor Model in 7 x 10 Foot Wind Tunnel.

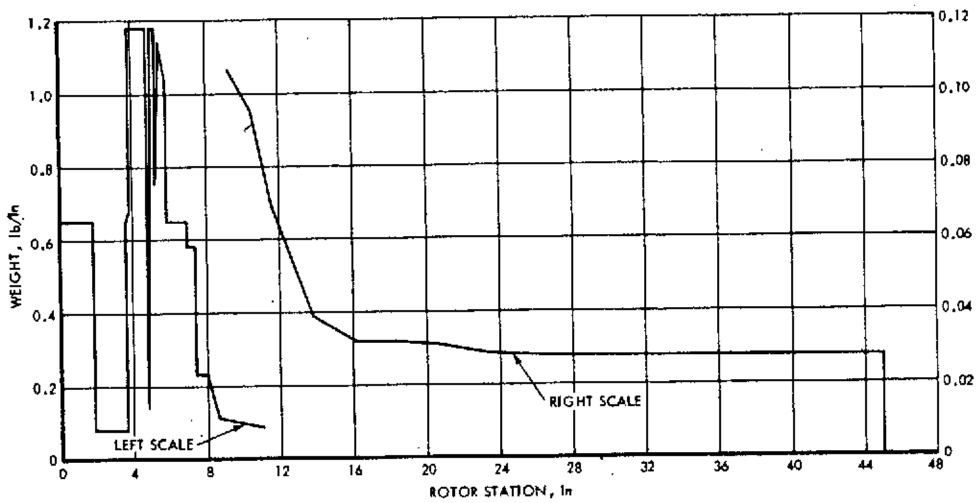

Figure 2. Blade Weight Distribution vs. Rotor Station.

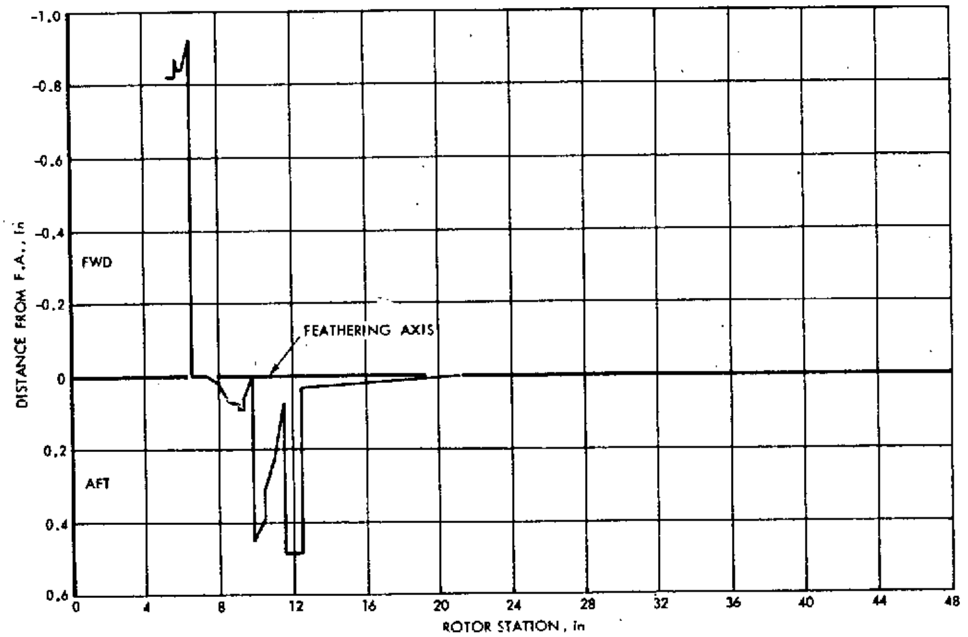

Figure 3. Blade Mass Centroid Relative to Feathering Axis vs. Rotor Station.

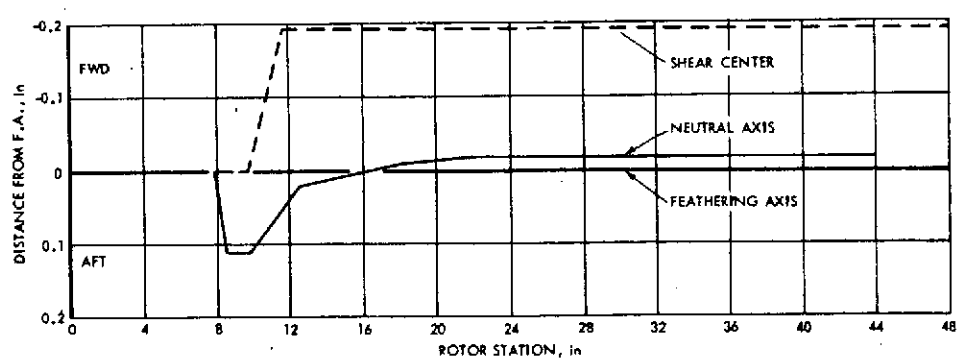

Figure 4. Blade Shear Center and Neutral Axis Relative to Feathering Axis vs. Rotor Station.

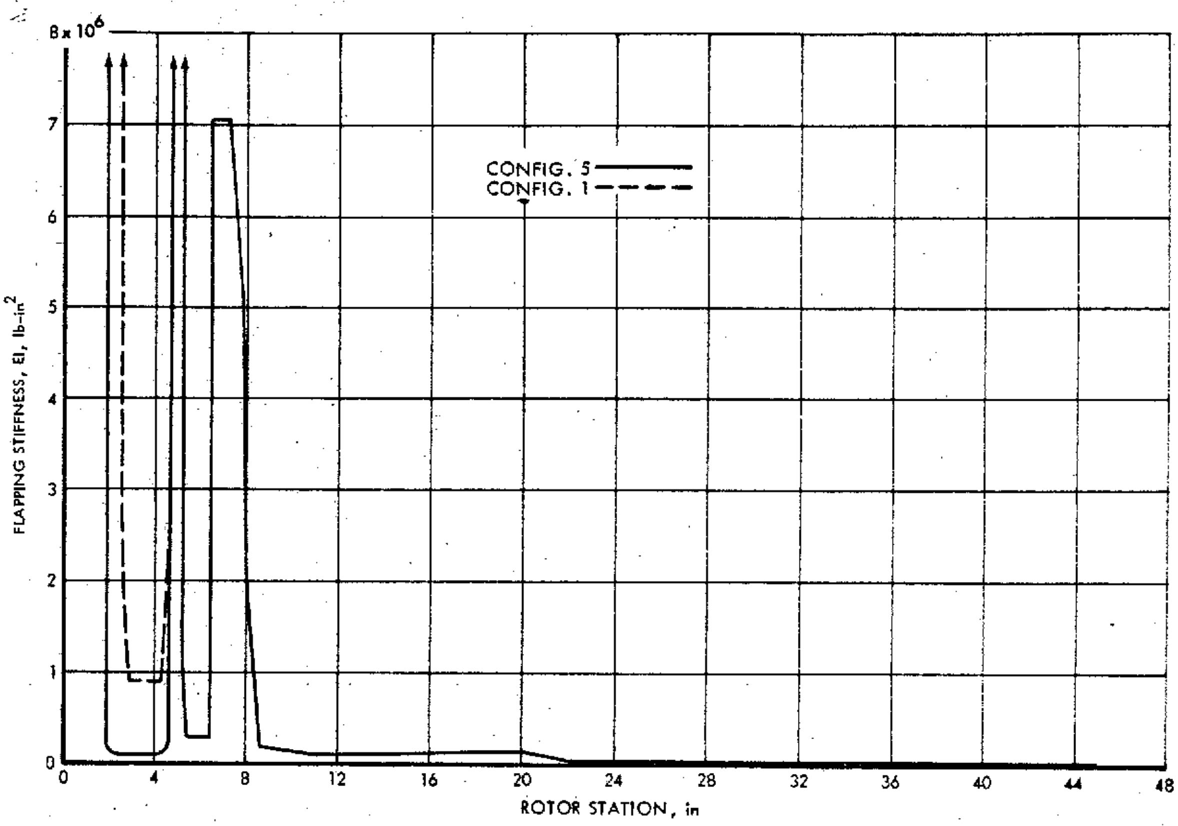

Figure 5. Blade Flapping Stiffness vs. Rotor Station.

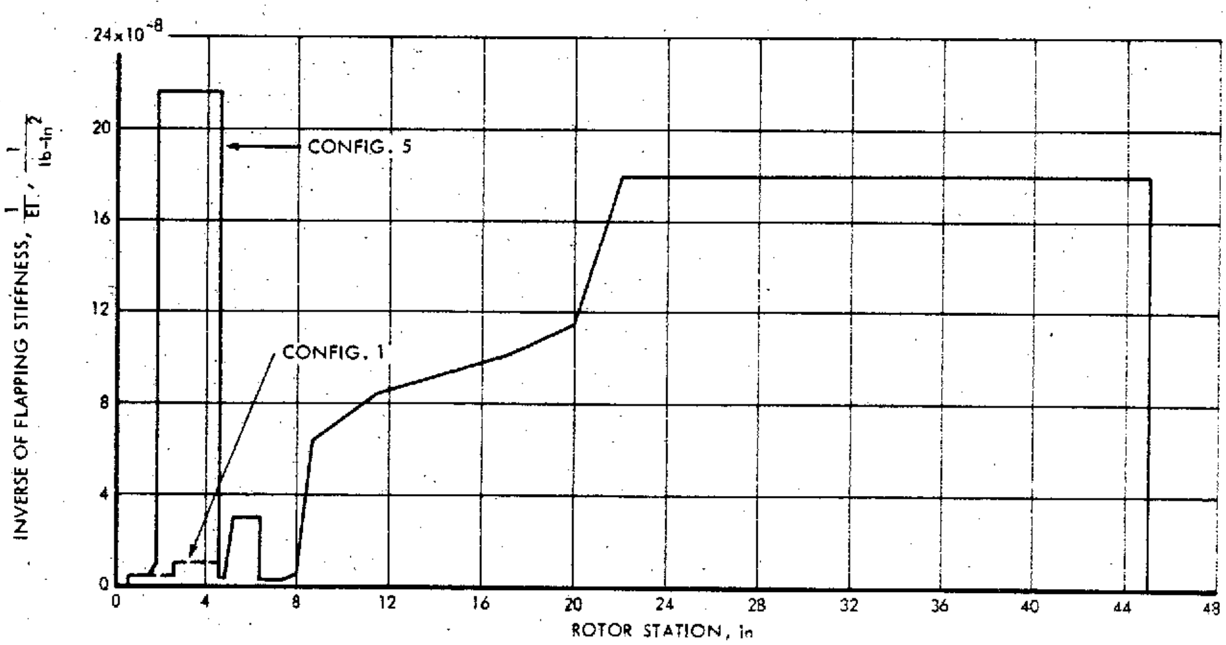

Figure 6. Inverse of Blade Flapping Stiffness vs. Rotor Station.

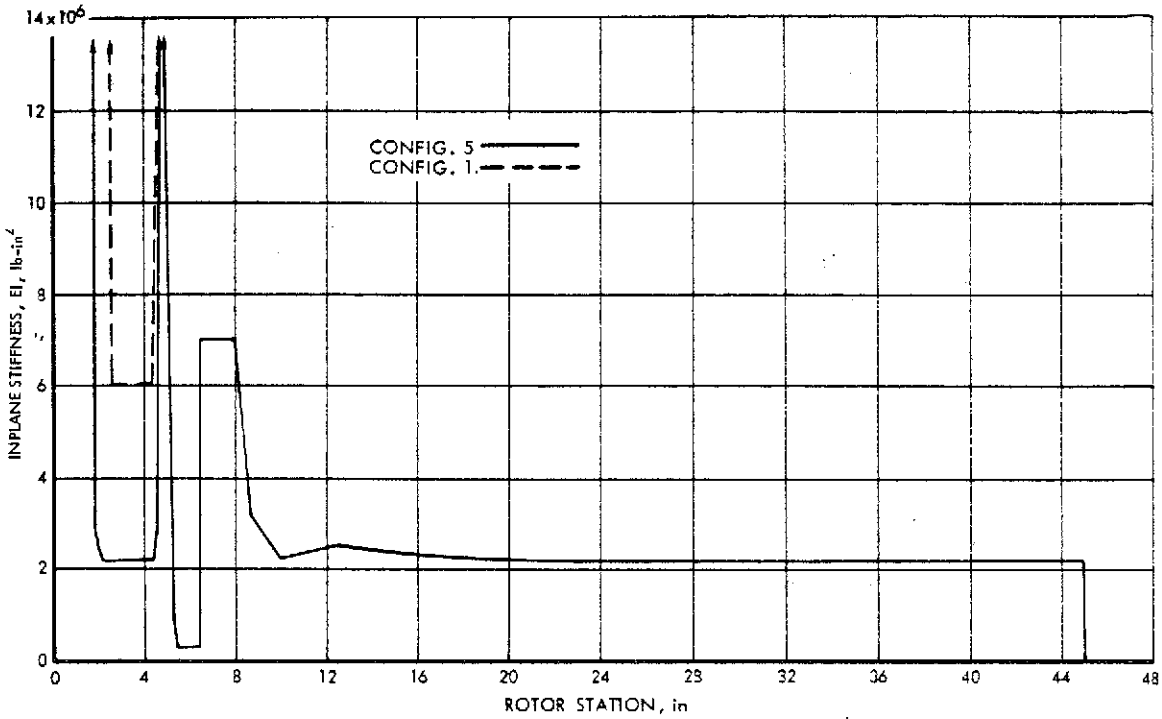

Figure 7. Blade Inplane Stiffness vs. Rotor Station.

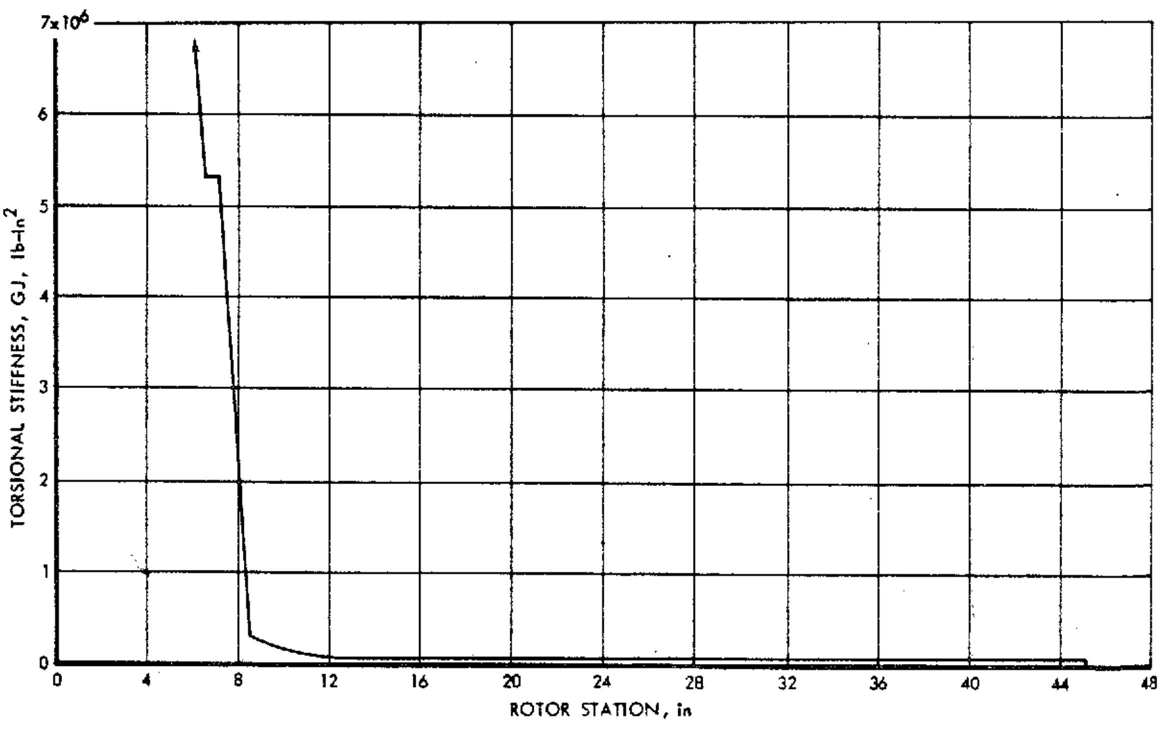

Figure 8. Blade Torsional Stiffness vs. Rotor Station.

VIBRATION MODES

The natural modes of vibration of the rotor, stopped and rotating, were found by analysis and checked by experiment. In addition, the fundamental cantilever modes of the model body supported by its pylon were found by experiment. For some of the modes, structural damping coefficients were determined by examination of the decay of free vibration.

These data are of interest in the interpretation of the rotor transfer functions and for verifying the adequacy of the mathematical representation of the rotor system. Transfer function advancing and regressing flapping-mode peaks, for example, depend on the rotating blade first flap natural frequency. Irregularities in the transfer functions are caused by the body modes at their natural frequencies. The need for checking the adequacy of the mathematical representation of the rotor is indicated by the poor agreement with the experiment of the second-flap and first-inplane mode frequency variations with collective pitch.

Rotor Modes

Rotor blade vibratory mode shapes and associated frequencies were calculated employing the mass, stiffness, and geometric data of the previous section. The theoretical variation of modal frequency with rotor speed and collective pitch for Configurations 5 and 1 is shown in Figures 9 and 10, respectively. Experimental values of the natural frequency of the first-flap, second-flap, and first-inplane modes are presented in Table II for Configuration 5 and are shown in Figure 9.

Calculated nondimensional vibration mode shapes for the first-flap, second-flap and first-inplane modes are shown in Figures 11, 12, and 13 for the nonrotating rotor at zero collective pitch. Experimental values, nondimensionalized to the theoretical at 90 percent radius, are also shown for comparison.

TABLE II. BLADE NATURAL FREQUENCIES, CONFIGURATION 5

RPM	COLLECTIVE PITCH, DEG.	MODAL FREQUENCY, Hz					
		1ST FLAP		2ND FLAP		1ST INPLANE	
		THEO.	EXP.	THEO.	EXP.	THEO.	EXP.
0	0	6.8	6.9	39.8	40.3	43.0	24.1
	8	6.8	6.9	43.8	40.9	35.0	25.5
	16	6.8	7.1	54.0	43.6	30.0	25.8
550	0	-	-	-	-	43.2	30.0
850	0	-	-	-	-	43.5	33.0
	16	-	-	-	-	35.0	30.8

The major components of the vibration modes changed very little with collective pitch and rpm, at least up to 850 rpm. The theoretical and experimental minor (or coupled) components of the vibration modes (that is, the inplane components of the flap modes and the flapping components of the inplane mode) did not correlate well at high values of collective pitch. The coupled components of the untwisted blades were, of course, zero at zero collective pitch.

Body Modes

The rotor and its drive system were housed in a body as shown in Figure 1. The body was gimballed to the top of its support pylon and restrained from pitching and rolling by hydraulic actuators. The tubular support pylon, containing the lift balance, therefore controlled the lateral and fore-aft fundamental vibration modes of the body.

In the whirl tests, conducted in the model preparation area, the rotor and body were supported by the pylon in one of three stiffened configurations. The first (Pylon 1) was the normal or unrestrained configuration similar to that shown in Figure 1. In the second (Pylon 2), the pylon was braced by steel angles radiating from the pylon below the gimbals and bolted to the floor. In the third configuration (Pylon 3), the body was braced to restrain

rotation about its gimbals, in addition to the bracing of the previous configuration.

The fundamental natural frequencies of the body on the pylon with the rotor not rotating are presented in Table III. The modes are the cantilever lateral or rolling mode and the cantilever fore-aft or pitching mode.

TABLE III. BODY NATURAL FREQUENCIES

TYPE OF MODE \ BRACING CONFIG.	PYLON 1 (UNBRACED) Hz	PYLON 2 (PYLON ONLY BRACED) Hz	PYLON 3 (PYLON AND BODY BRACED) Hz
LATERAL (ROLL)	7.2	10.2	15.2
FORE-AFT (PITCH)	8.2	11.8	20.8

It should be noted that there were body-pylon modes of somewhat higher frequencies than the fundamentals noted above that were not fully defined in the vibration test. There were, of course, no natural body-pylon modes of frequency lower than the fundamentals.

Modal Damping

Damping coefficients as a fraction of critical were determined experimentally by observing the decay of the free vibration of some of the nonrotating rotor blade and body modes. The damping measured was consistent with that typically measured in similar structures.

There was a trend toward higher damping in the flapping modes with higher collective pitch. This appeared to be due to an increased coupling with the first-inplane mode, which in itself had much higher damping than the flapping modes in this model.

The damping coefficients as a fraction of critical are defined by:

$$\zeta = \frac{1}{2}\,\frac{\log_e 2}{\pi \Delta n_{1/2}}$$

and are presented in Table IV, where $\Delta n_{1/2}$ is the number of cycles to half amplitude.

TABLE IV. MODAL DAMPING

MODE DESCRIPTION	COLLECTIVE PITCH, DEG.	ζ, DAMPING COEFFICIENT
First Flap	4	.009
	8	.014
Second Flap	4	.005
	8	.012
	16	.013
First Inplane	0	.028
	8	.019
	16	.022
Body Lateral	-	.016

Blade vibration modes were found by reading accelerations normal to blade surfaces with miniature piezoelectric crystal transducers. Blade resonance was excited by a small electromagnetic shaker attached either to the rotor hub or to the blade root just outboard of the stiffness controlling flexures where the increase in blade mode generalized mass, due to armature weight, was negligible.

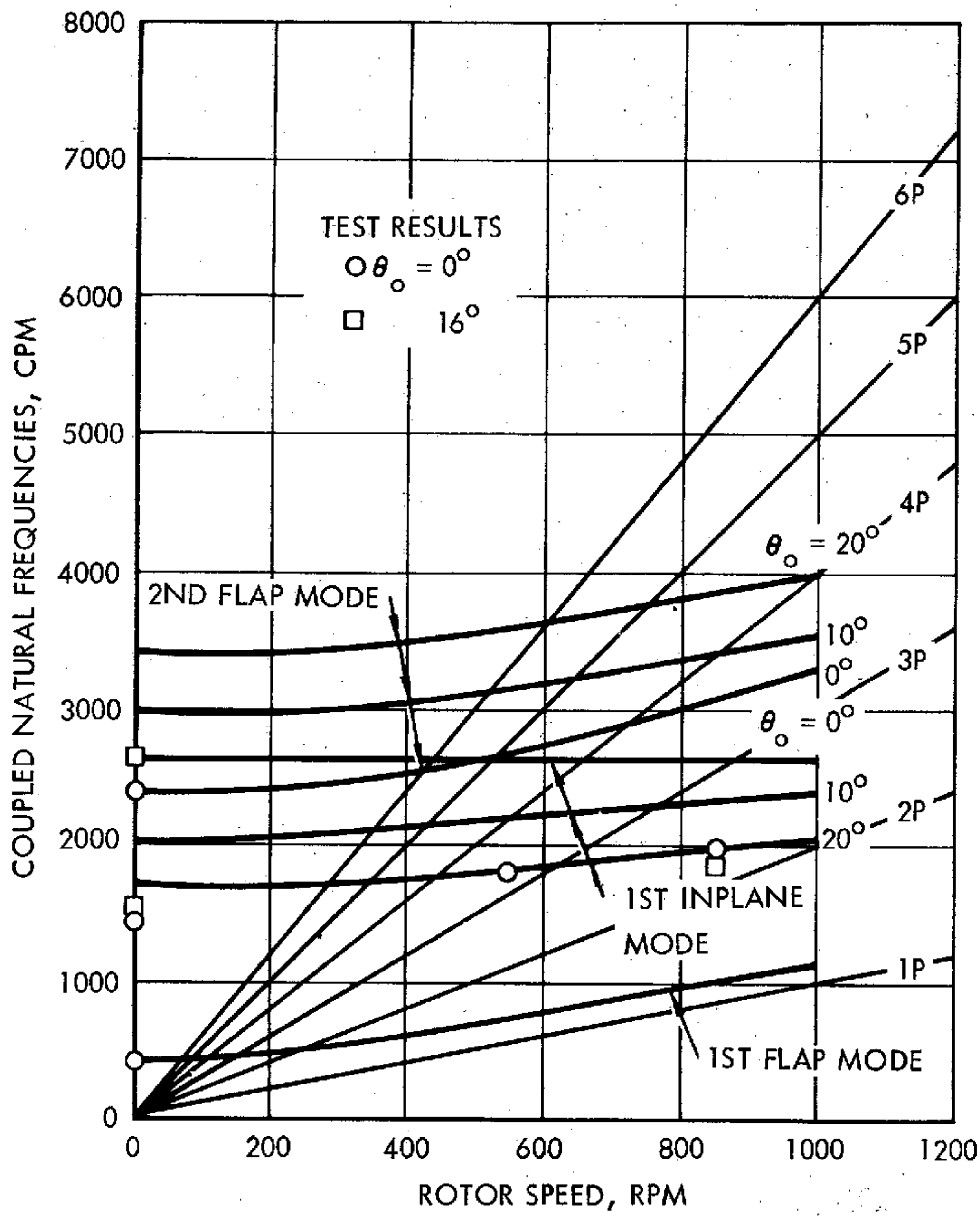

Figure 9. Configuration 5, Blade Natural Frequencies vs. Rotor Speed.

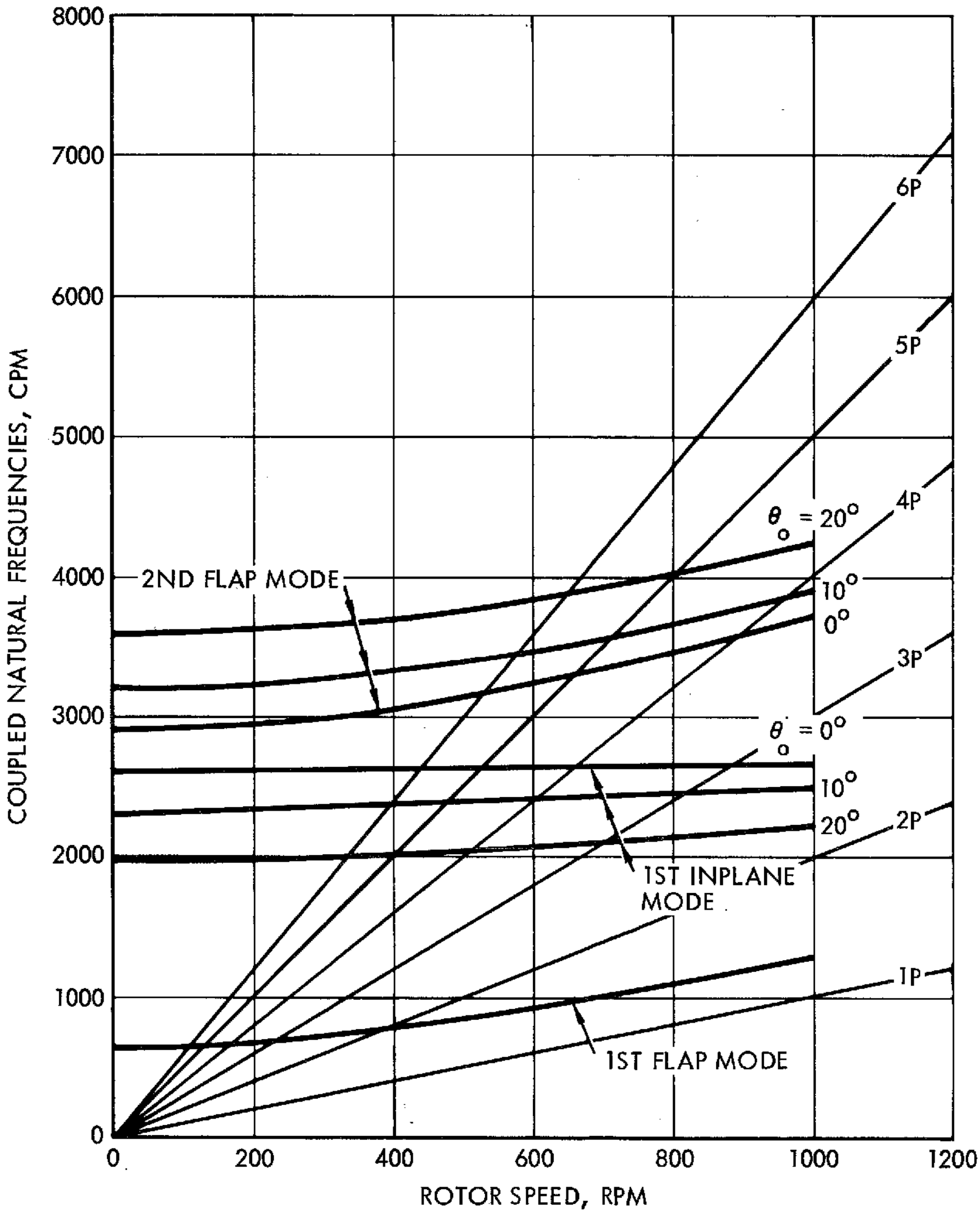

Figure 10. Configuration 1, Blade Natural Frequencies vs. Rotor Speed.

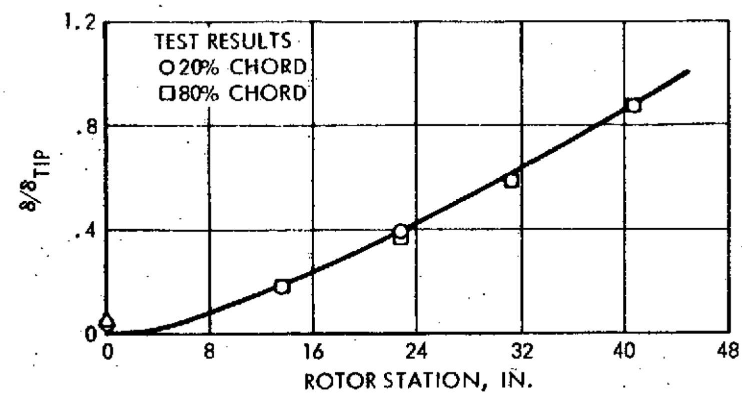

Figure 11. Configuration 5, Nonrotating First Flap Mode vs. Rotor Station. $\theta_o = 0^o$.

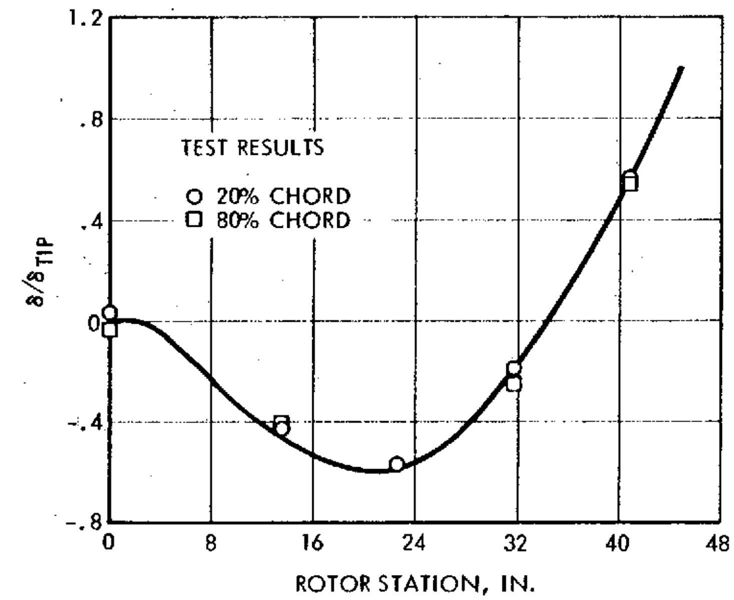

Figure 12. Configuration 5, Nonrotating Second Flap Mode vs. Rotor Station. $\theta_o = 0^o$.

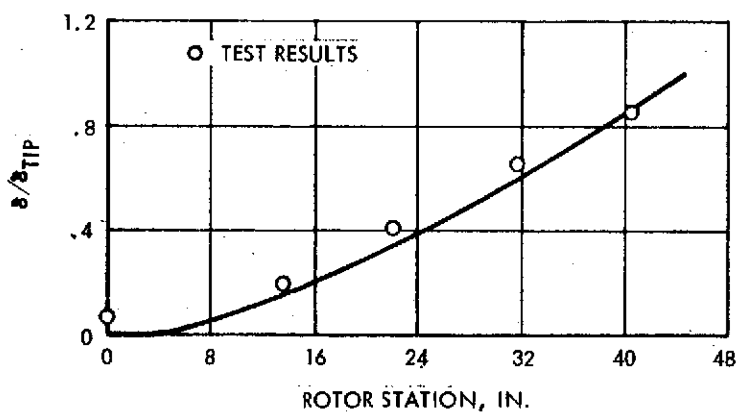

Figure 13. Configuration 5, Nonrotating First Inplane Mode vs. Rotor Station. $\theta_o = 0^o$.

DATA ACQUISITION

The instrumentation and recording equipment were used together to provide a record of system behavior, to facilitate control, and to permit on-line monitoring of critical system loads.

Instrumentation

The rotating instrumentation consisted of shaft- and blade-mounted strain gages and a position potentiometer for measuring blade feathering angle. The resultant signals were transferred to the stationary system by means of a slip ring assembly.

Flap-bending signals from strain gage bridges on each blade at station 3.3 were resolved into rotor pitching and rolling moments (as measured at station 3.3) in stationary coordinates and recorded. This was accomplished by passing the signal through a shaft-mounted potentiometer which continuously generated sine and cosine functions of the rotor azimuth. The flap-bending signals were also summed to give an indication of rotor collective bending or thrust.

Model-mounted, stationary measurement devices included linear potentiometers for measuring the shaft pitch and roll angles, as well as the positions of the collective and cyclic pitch actuators. Rotor speed was measured by means of a magnetic pickup that was triggered as blade 1 passed zero azimuth, $\psi = 0$. Accelerometers measured the lateral and longitudinal vibration of the body. A six-component strain gage balance in the model support strut produced measurements of body forces and moments.

Wind tunnel instrumentation included the tunnel balance which was used as a backup to the strain gage balance. Total head and temperature were measured in the settling chamber, while a pitot-static tube in the test section yielded dynamic pressure. Barometric pressure and ambient temperature measurements were also available during the hover tests in the preparation area.

Data Recording Equipment

A Honeywell magnetic tape system, a Honeywell oscillograph, and a Datex analog to digital converter were the primary means of recording data. The oscillograph was used to monitor critical loads. The Datex system was mainly used for obtaining mean data and tunnel conditions. The data recorded on magnetic tape was the basis for all of the steady-state and frequency response data in this report.

A transfer-function analyzer was used, in addition to the above devices, during the frequency-response tests. X-Y-Y plotters displayed the analyzer gain and phase signals produced by the input control and blade flapping response. The on-line availability of the transfer functions in graphical form aided in the selection of excitation frequencies.

A summary of the parameters measured and how they were measured is given in Table V.

TABLE V. DATA ACQUISITION SYSTEM

DATUM	INSTRUMENTATION	OSCILLO-GRAPH	ANALOG TAPE	DATEX
Flap- Bending Moment at Sta. 22.3	Flap-Bending Strain Gage at Sta. 22.3 on Blade 1	X		
Flap-Bending Moment at Sta. 13.15	Flap-Bending Strain Gage at Sta. 13.15 on Blade 1	X	X	
Flap-Bending Moment at Sta. 3.3	Flap-Bending Strain Gage at Sta. 3.3 on Blade 1	X	X	
Rotor Stationary Pitching and Rolling Moments at Sta. 3.3	Flap-Bending Strain Gages at Sta. 3.3 on all Blades	X	X	X
Summed Blade-Bending Moments at Sta. 3.3	Flap-Bending Strain Gages at Sta. 3.3 on all Blades	X	X	
Chord-Bending Moment at Sta. 13.15	Chord-Bending Strain Gage at Sta. 13.15 on Blade 1	X		
Chord-Bending Moment at Sta. 2.4	Chord-Bending Strain Gage at Sta. 2.4 on Blade 1	X	X	
Blade Torsional Moment at Sta. 9.28	Torsional Strain Gage at Sta. 9.28 on Blade 1	X	X	
Shaft Rotating Bending Moment	Shaft Strain Gages 2 in. below rotor plane at $\psi = 0^\circ$ and 180°	X	X	
Blade-Pitch Angle	Blade-Feathering Position Potentiometer on Blade 1	X	X	
Collective Pitch Angle	Collective Pitch Actuator Position Potentiometer	X	1	X
Longitudinal Cyclic Pitch Angle	Longitudinal Cyclic Pitch Actuator Position Potentiometer	X	1	X
Lateral Cyclic Pitch Angle	Lateral Cyclic Pitch Actuator Position Potentiometer	X	1	X
Shaft Pitch Angle	Body Pitch Actuator Linear Position Potentiometer	X	1	X

TABLE V. DATA ACQUISITION SYSTEM (CONT'D)

DATUM	INSTRUMENTATION	OSCILLO-GRAPH	ANALOG TAPE	DATEX
Shaft Roll Angle	Body Roll Actuator Linear Position Potentiometer	X	1	X
Oscillator Input	Direct-Voltage Measurement	X	2	
Body Fore-Aft Acceleration	Body Fore-Aft Accelerometer	X		
Body Lateral Acceleration	Body Lateral Accelerometer	X		
Rotor Rotational Speed	One-Per-Rev Magnetic Pickup	X	X	X
Body Forces and Moments	Body-Mounted Strain Gage Balance	3	3	4
Body Forces and Moments	Wind Tunnel Balance			X
Total Temperature	Probe in Wind Tunnel Settling Chamber			X
Total Pressure	Probe in Wind Tunnel Settling Chamber			X
Dynamic Pressure	Probe in Wind Tunnel Test Section			X

1. Collective or shaft pitch recorded during steady-state tests. Two selected angles recorded during frequency-response tests.

2. During frequency-response tests.

3. Thrust and torque measured during steady-state tests. No measurements during frequency-response tests.

4. Measured during steady-state tests.

STEADY-STATE RESPONSE TESTS

The primary purpose of steady-state response tests was the determination of blade and rotor loads resulting from steady inputs from the swashplate or from shaft tilt. The emphasis was upon obtaining data over a broad range of collective pitch angles while operating the rotor at representative helicopter advance ratios.

The test procedure was to initially trim the rotor to near zero mean hub moment for a given preselected advance ratio and collective pitch. The excitation, either collective pitch, lateral or longitudinal cyclic pitch or rotor shaft angle, was then varied in approximately equal increments in both directions from trim, while holding the other controls fixed. The type of data recorded at each interval, is listed in Table V. The test conditions are summarized in Table VI.

The resultant data on analog tape were digitized, scaled, and harmonically analyzed up to the fifth harmonic of the rotor angular frequency for more than 40 revolutions of the rotor. The response loads as well as the control excitations were harmonically analyzed in this manner. Blade cyclic angles were obtained from the blade feathering in the rotating system.

From each series of test points, linearized derivatives were formed by the method of least squares. In general, the derivatives were formed from 3 or 4 dimensional arrays, since it proved difficult to maintain identical cyclic angles from test point to test point. In particular, it was difficult to perturb cyclic inputs about one axis without disturbing the other.

Nondimensionalized derivatives of shaft moment, hub moment (at $r = 3.3$), thrust, and torque were evaluated. Blade loads derivatives, however, were not. The test points and the calculated derivatives are tabulated in Appendix A.

Some of the linearized derivatives are shown in Figures 14 through 22. Thrust and hub moments due to unit values of blade cyclic, collective, and rotor angle of attack are shown as functions of advance ratio. In some cases, the data used to evaluate the derivatives was found to be quite non-linear, and consequently linearized derivatives are unavailable. In Appendix A, several of the test-point loads are plotted versus the primary input angle to demonstrate the degree of linearity present. In general, there appears to be the expected trend toward linearity with increasing advance ratio.

TABLE VI. STEADY-STATE RESPONSE TEST CONDITIONS

CONFIG.	RPM	P	μ	α	θ_0	EXCITATIONS
5	850	1.15	0.0	0	0-20	θ_s
					0-12	θ_c
				0		θ_0
			0.05		1-4	θ_s, θ_c
			0.10		1-8	θ_s, θ_c, θ_0, α
			0.15		1-12	
			0.20			
			0.26			θ_s, θ_c
					4-12	α
			0.36			θ_s, θ_c
					4-8	θ_0, α
				3	8	θ_s
				-5		
			0.50	-3		
	550	1.28	0.0	0	0-12	θ_s
1	800	1.33	0.0	0	0-20	θ_s
					4	θ_c

As previously stated, both the shaft moment, as measured at 2 inches below the rotor plane, and the hub moment, as measured at r = 3.3 inches have been reduced to derivatives. Based on the first-flap mode, the ratios between blade root (or center of rotation) moments and moments at r = 3.3 inches at the rotor speeds used, are (from References 1 and 3) shown in Table VII.

TABLE VII. RATIO OF ROOT MOMENT TO MOMENT AT r = 3.3 INCHES

CONFIGURATION	RPM	k
5	850	1.785
5	550	1.430
1	800	1.235

The above ratios are not completely applicable for comparing the shaft moment measurement with that at r = 3.3 inches. Since the shaft gage was 2 inches below the rotor plane, moments due to thrust vector tilt and drag forces are reflected in this measurement.

The shaft moment derivatives displayed somewhat more scatter than hub derivatives, due in part to the inplane forces. Other contributing factors could be that the shaft rotating measurement reflected loads on blades 1 and 3 only, whereas the hub loads were based on the resolution of measurements on all 4 blades. A slight error, present in all of the rotating loads and displacements, is caused by the requirement to digitize the continuous analog signal (.001 second-step size was used). None of the shaft moment derivatives, nor any of the torque derivatives, are shown in the form of plots.

In summary, the hub moments at the center of rotation (C_l, C_m) may be obtained from the hub moments measured at radial station 3.3 inches ($C_{L_{3.3}}$, $C_{M_{3.3}}$) by application at the factor k.

$$C_l = k\, C_{L_{3.3}}$$

$$C_m = k\, C_{M_{3.3}}$$

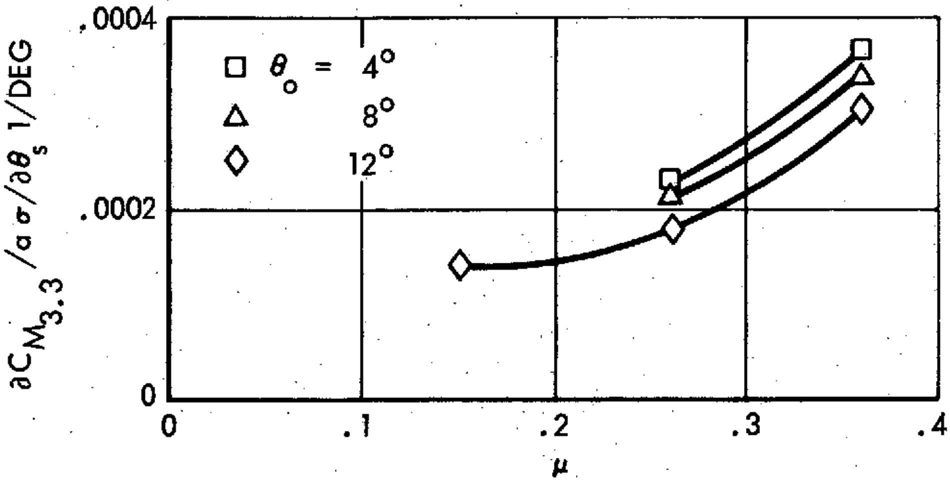

Figure 14. Configuration 5, Hub Pitch Moment Due to Unit Lateral Cyclic Angle vs. Advance Ratio (P = 1.15).

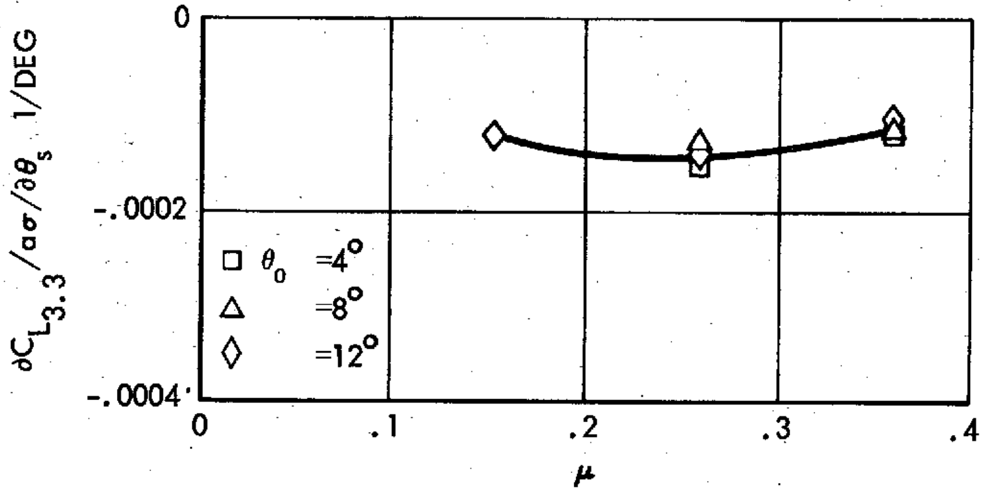

Figure 15. Configuration 5, Hub Roll Moment Due to Unit Longitudinal Cyclic Angle vs. Advance Ratio. (P = 1.15).

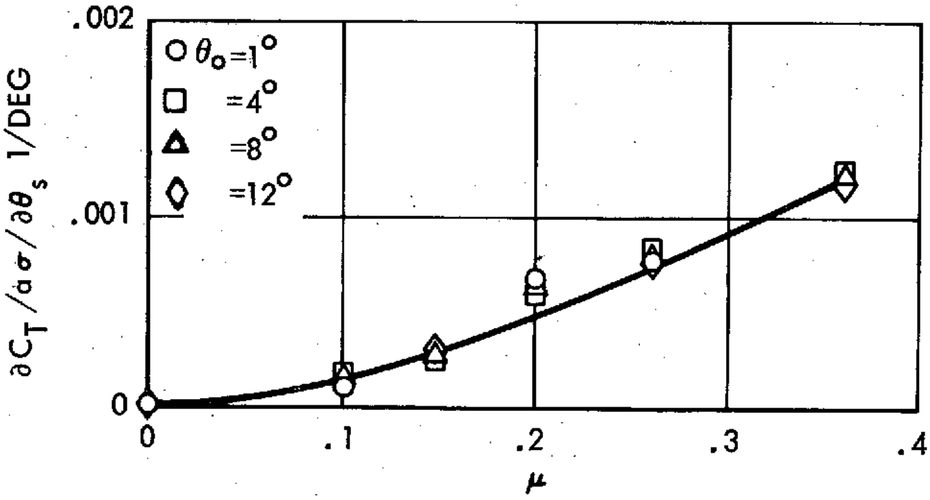

Figure 16. Configuration 5, Thrust Due to Unit Longitudinal Cyclic Angle vs. Advance Ratio. (P = 1.15).

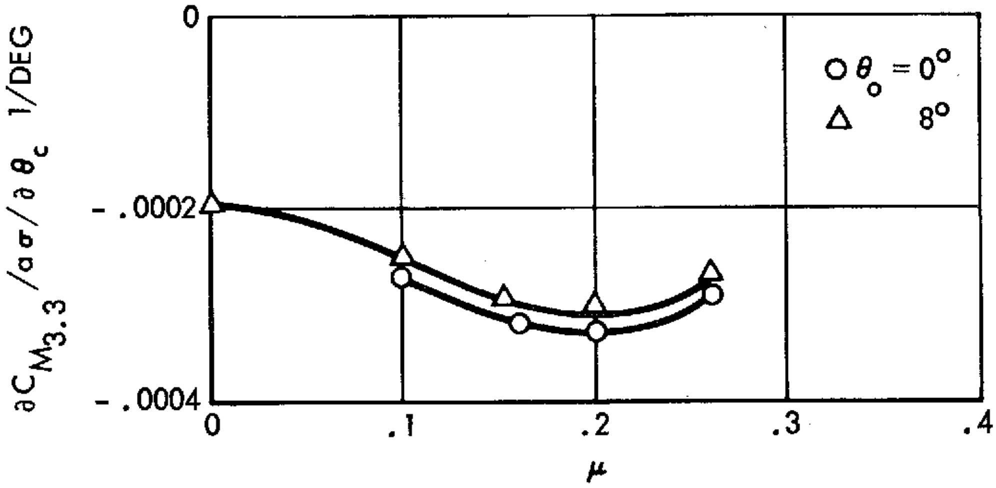

Figure 17. Configuration 5, Hub Pitch Moment Due to Unit Lateral Cyclic Angle vs. Advance Ratio (P = 1.15).

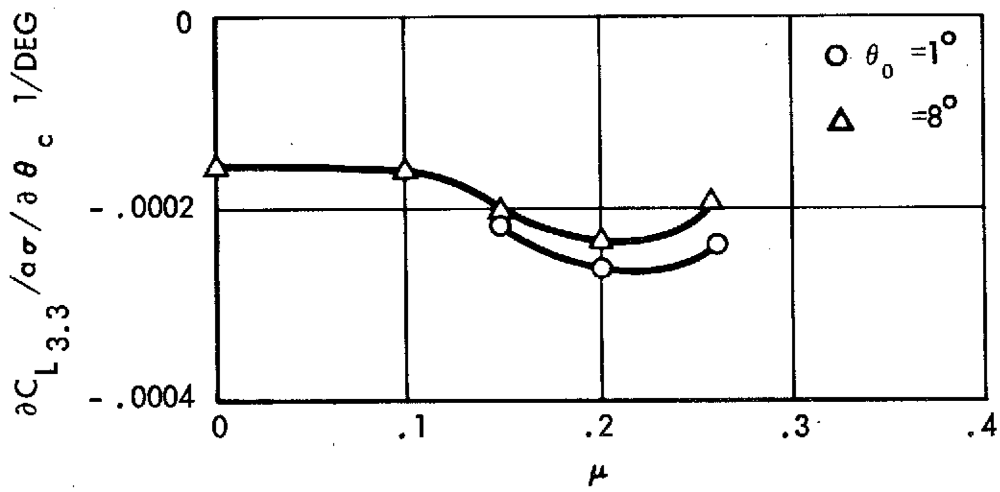

Figure 18. Configuration 5, Hub Roll Moment Due to Unit Lateral Cyclic Angle vs. Advance Ratio (P = 1.15).

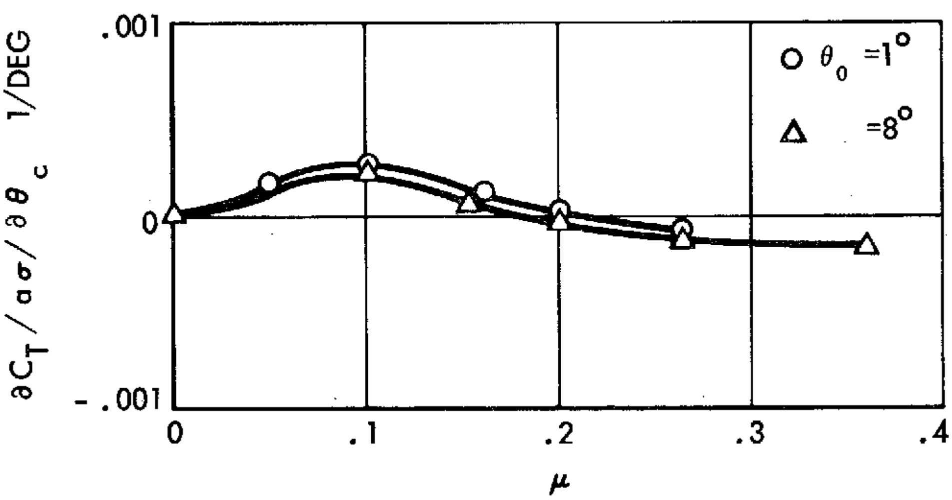

Figure 19. Configuration 5, Thrust Due to Unit Lateral Cyclic Angle vs. Advance Ratio (P = 1.15).

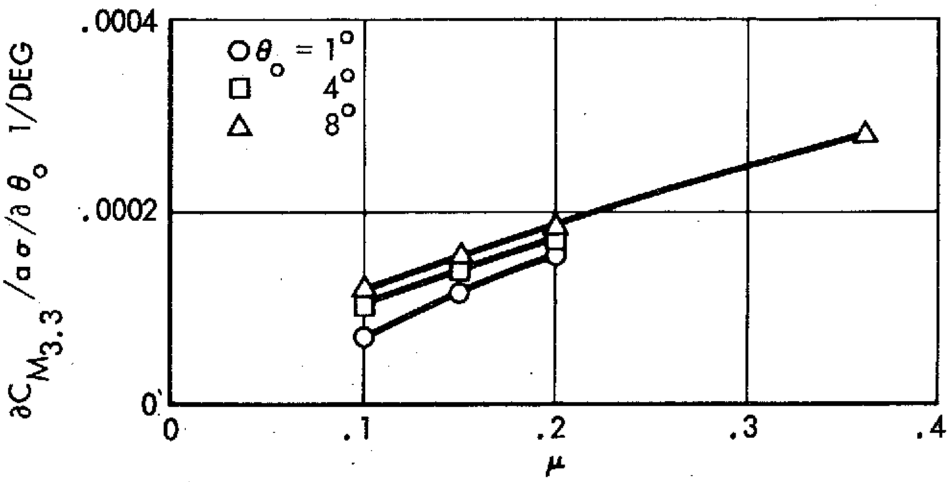

Figure 20. Configuration 5, Hub Pitch Moment Due to Unit Collective Angle vs. Advance Ratio (P = 1.15).

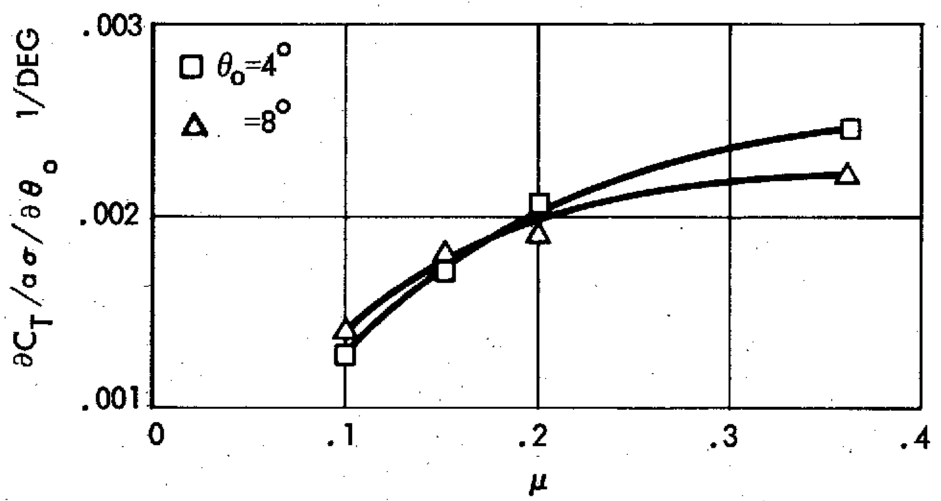

Figure 21. Configuration 5, Thrust Due to Unit Collective Angle vs. Advance Ratio (P = 1.15).

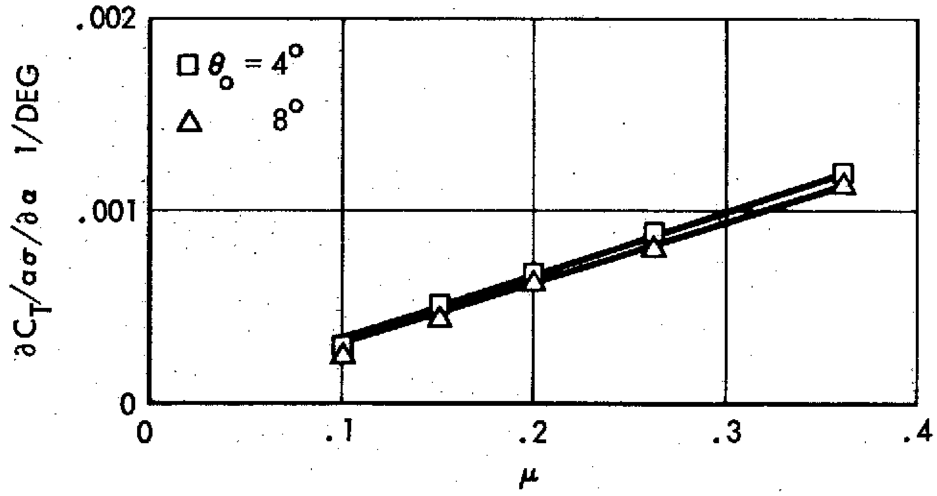

Figure 22. Configuration 5, Thrust Due to Unit Rotor Angle of Attack vs. Advance Ratio (P = 1.15).

FREQUENCY RESPONSE TESTS

Hub pitch and roll moment responses to swashplate and shaft oscillations were determined from the frequency-response tests. The conditions established for the frequency-response tests were generally similar to those for the steady-state response tests. That is, data was taken at low to high collectives over similar advance ratios. A summary of the conditions tested is shown in Table VIII.

In order to raise the model support modal frequencies, the model was externally braced. During swashplate excitation tests, both the model body and pylon were braced (see Pylon 3 in VIBRATION MODES Section). During the shaft pitch and roll tests, the pylon only could be braced (see Pylon 2). Just one test was conducted with no bracing (Figures B-5 and B-6).

The test procedure was to input discrete frequencies, beginning with the lowest frequency and proceeding to the highest, with the rotor initially trimmed to zero mean hub moments. Higher input frequencies were attained with the model in the more heavily braced configuration (Pylon 3). In general, the peak-to-peak amplitudes of the input angles ranged from 1 to 6 degrees.

Sufficient data record lengths were taken to allow at least 3 cycles of data to be harmonically analyzed to the period of the lower-frequency oscillator inputs. For the inputs of higher frequency, up to 100 cycles of data were harmonically analyzed to the period of the oscillator. The digitizing step size was .002 seconds except for the oscillator periods of 5 and 10 seconds, where .005 seconds was used. A summary of the measurements taken is shown in Table V.

The nonrotating, hub flapping moment output at rotor station 3.3 inches, transferred to the shaft centerline were used in conjunction with either blade cyclic, blade collective, shaft pitch or shaft roll to form the rotor

TABLE VIII. FREQUENCY RESPONSE TEST CONDITIONS, CONFIGURATION 5

RPM	P	μ	θ_0	EXCITATIONS	EXCITATION FREQ., Hz
850	1.15	0.0	0-16	θ_s	0-32
			0-4	θ_c	
			0-8	α	0-10
			0-16	ϕ	
		0.05	1	θ_s, θ_c	0-16
			2	θ_o	
			12	α	0-12
		0.10	1, 12	θ_s , θ_c	0-16
			2, 12	θ_o	
			1, 12	α , ϕ	0-12
		0.15	1	θ_s	0-16
		0.20	1, 12		
		0.26		θ_s, θ_o	
			12	θ_c	
			1, 12	α, ϕ	0-12
550	1.28	0.0	0-16	θ_s	0-40

transfer functions. These are presented in Appendix B in both tabular and graphical form.

As in prior frequency response tests with this model, coupling was present between the two cyclic control angles. That is, when one cyclic control was oscillated, a portion of the excitation was gyroscopically fed into the other cyclic control. The effect was rather pronounced at high input frequencies. The magnitudes of cross-coupling present at the various frequency ratios for the rotor speeds used are shown in Figure 23. (Note that at 550 rpm, no oscillations were applied to the lateral cyclic control.)

The effect of swashplate cross-coupling was eliminated (as in Reference 3) by pairing test points of opposing cyclic oscillation inputs, all other conditions being identical. This resulted in two complex equations of the form:

$$HM = \left(\frac{\partial HM}{\partial \theta_s}\right)\theta_s + \left(\frac{\partial HM}{\partial \theta_c}\right)\theta_c$$

which could be simultaneously solved for the moment derivatives.

The testing was concentrated upon obtaining longitudinal cyclic response transfer functions, to the exclusion of the lateral cyclic response conditions. In hover, symmetry was simply assumed where there were no lateral cyclic response cases available for pairing.

Lateral cyclic response cases were also unavailable for some of the forward flight conditions. However, the rotor frequency response to lateral cyclic appeared to vary little over the limited range of advance ratios at which tests were conducted. (Compare Figures B-33 and B-34 with Figures B-35 and B-36, respectively.) Therefore, some of the frequency-response conditions due to longitudinal cyclic were decoupled by lateral cyclic input conditions with slightly different advance ratios, other parameters being identical.

As noted in the Model Description Section, the shaft (or body) pitch and roll pivot points are located 11.25 inches below the rotor plane of rotation. The pitch pivot is also located 12.0 inches aft of the shaft. The transfer function due to roll is thus influenced by lateral hub acceleration; and the shaft pitch generated value includes the effects of both longitudinal and vertical accelerations at the hub.

Many of the rotor transfer functions were influenced by the body/pylon modal frequencies, which are listed in Table III. These values were obtained from the shake tests in the model preparation area, where the hover tests were conducted. In the wind tunnel the model was braced in nearly the same way as it was in the hover tests; however, shake tests were not performed. The apparent shift in body/pylon resonant frequencies from those of Table III for the wind tunnel tests, were thought to be due in part to the pylon mounting.

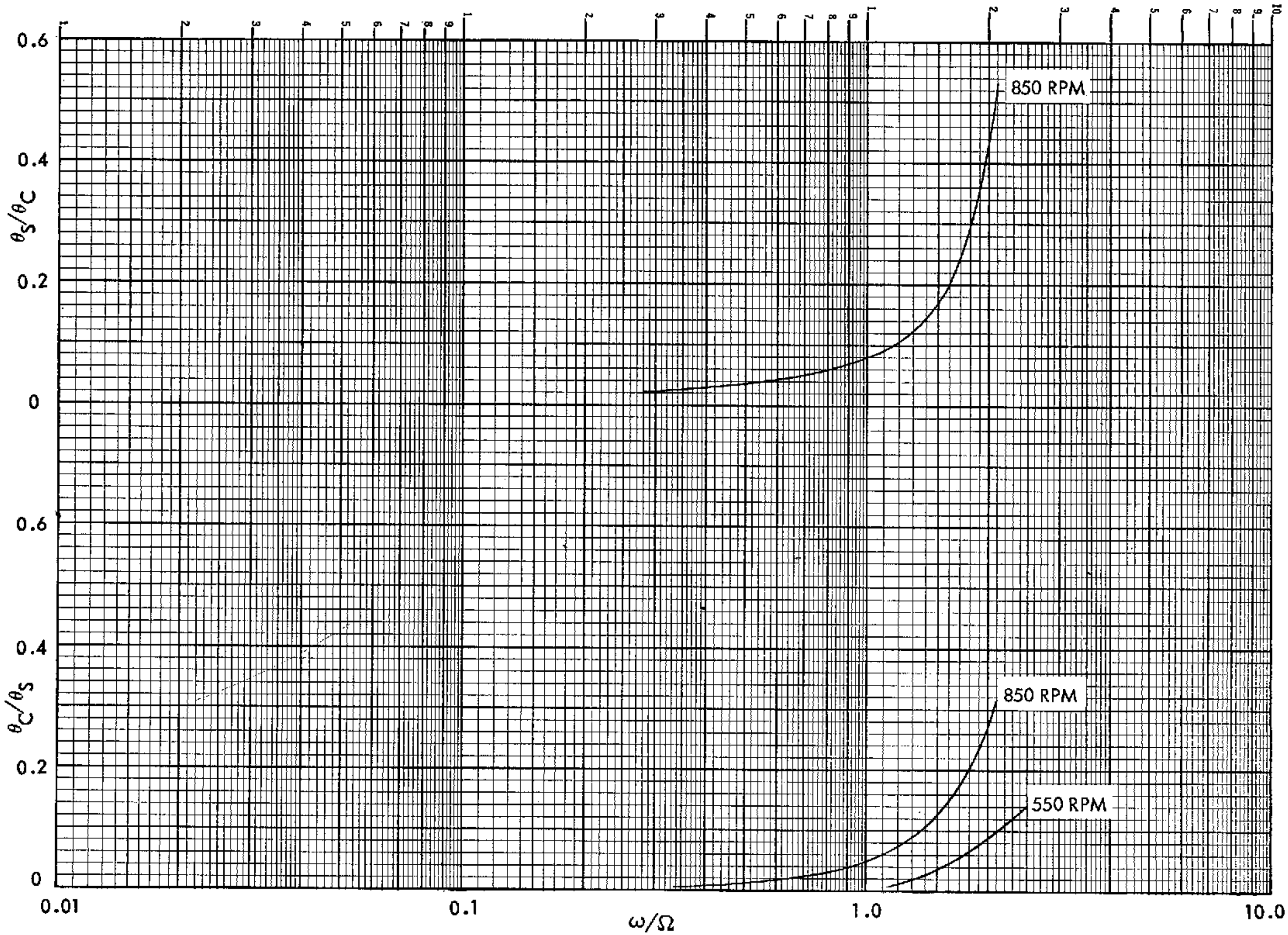

Figure 23. Amplitude of Cyclic Pitch Coupling vs. Nondimensional Excitation Frequency.

CONCLUDING REMARKS

A large volume of experimental rotor transfer function data, due to both steady and oscillating swashplate and shaft inputs, has been gathered in the low-advance ratio region over a broad range of lift levels. The data presented herein, together with that obtained in the prior-related tests of various configurations at widely varying conditions, form a valuable bank of information for research purposes. With the exception of the vibration reduction study in Appendix C, this document presents experimental data, without theoretical correlation, intended for further study.

Several remarks concerning the experimental data are in order. Relative to the rotor response to steady inputs, some of the resultant mean derivatives have been shown to be linear over portions of the range of advance ratios investigated, namely from $\mu = 0$ to 0.36. The derivatives were more linear at high lift level and high advance ratio. Tunnel wall interference effects were quite evident below $\mu = 0.10$, and influenced both the steady and frequency-response test results.

The rotor transfer functions due to 4/revolution inputs to the swashplate of the four-bladed rotor were investigated experimentally. The present report includes a preliminary evaluation of the concept of vibration reduction by properly selected oscillatory collective and cyclic control applications. The investigations are based on experimental frequency response data covering advance ratios from approximately 0.2 to 0.85.

As there was no instrumentation for the measurement of the pitch- and roll-vibrations, these values were obtained by properly adding up the

flap-bending moments at 3.3 inches. Needless to say, in the same fashion any other quantity representing pitch/roll vibrations can be compensated.

The calculated control inputs required for vibration reduction stay within acceptable limits. For four of the five conditions tested they are smaller than the values used for the frequency response tests. The blade pitch variations required for vibration alleviation vary, depending on the advance ratio, from 0.2 to 3 degrees.

As to be expected, the compensating controls affect the blade loads, i.e., torsion, flap and chordwise bending. With regard to flap bending at 3.3 inches (root flexure), the following statements can be made:

3 and 5P flap moments were greatly reduced

2P flap moments were affected very little

In this particular case, chordwise bending and blade torsion increased with advance ratio. Indications are that the 4P chordwise and 5P torsion moments may be the limiting factors for extreme high advance ratios. At lower μ-values the loads are not critical. It is therefore concluded that the concept investigated will work for low and medium advance ratios, i.e., for the speed-range of present day rotary wing aircraft. This application appears to be promising and further studies and tests are suggested. The system appears to be capable of reducing helicopter vibration greatly in transition flight, including the large values that occur in the autorotation flare maneuver.

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3. Kuczynski, W. A., "Experimental Hingeless Rotor Characteristics at Full Scale First Flap Mode Frequencies", NASA CR 114519, LR 25491, October 1972.

4. Shaw, J., Higher Harmonic Blade Pitch Control for Helicopter Vibration Reduction, MIT Report ASRL TR 150-1, December 1968.

5. Sissingh, G. J., Rotor Induced Flow Calculation by Combined Momentum and Blade Element Lift Theory, Part I, Loaded Disc. (In preparation)

APPENDIX A

ROTOR STEADY-STATE RESPONSE DATA

The steady-state response rotor data for Configurations 5 and 1 are shown in Tables A-I and A-II, respectively. All of the loads data are nondimensional and divided by blade section lift curve slope ($a = 5.73$). Four types of information are presented:

- Input parameters and loads at each test point. (Note that rotor incidence angle and blade collective pitch should be considered as nominal.)
- The deviation of each test-point load from the linear function formed by a least-squares, 3- or 4-dimensional analysis (listed under the Δ headings).
- The standard deviation of each load.
- The derivatives (and residual) due to each of the input variables. (Derivatives are per degree of angular input.) In each set of derivatives, only those due to the primary input variable are of importance.

Figures A-1 through A-18 are plots of hub moment or thrust due to blade cyclic, blade collective, or rotor angle of attack. Nondimensional loads are presented at advance ratios of 0, 0.20, and 0.36 for cyclic inputs, at 0.20 and 0.36 for collective inputs (while holding cyclic pitch constant), and at 0.36 for shaft angle-of-attack variations. Although the changes in loads are influenced somewhat by unintentional variations in cyclic angles, the character of the curves should not change. Thus, they are suitable for judging the linearity of the data.

The figures indicate that the assumption of linearity is not adequate for many of the test conditions. However, to aid in understanding the data, all of the linearizations have been carried along in Tables A-I and A-II.

TABLE A-I. CONFIGURATION 5, ROTOR STEADY STATE RESPONSE DATA.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
850.	0.0	.002397	0.08	3.80	-0.63	0.0	2.116E-04	-2.44E-05	-4.814E-04	-1.21E-05	2.465E-04	-4.44E-05	-9.206E-04	-1.86E-05	-5.083E-05	3.56E-05	1.337E-04	-3.85E-05
850.	0.0	.002397	0.07	5.59	-0.49	0.0	3.850E-04	2.57E-05	-8.191E-04	1.58E-05	4.920E-04	5.20E-05	-1.527E-03	2.35E-05	-1.126E-04	-4.63E-05	1.879E-04	4.98E-05
851.	0.0	.002397	0.08	-0.57	-0.11	0.0	2.472E-05	-4.57E-05	2.086E-05	2.63E-05	4.690E-05	-6.94E-05	7.772E-05	5.39E-05	3.460E-05	3.51E-05	1.028E-04	-1.98E-05
851.	0.0	.002397	0.07	-1.60	-0.09	0.0	2.572E-05	8.72E-06	1.165E-04	-3.44E-05	5.156E-05	-1.93E-06	2.502E-04	-6.67E-05	1.010E-05	5.94E-06	1.036E-04	-2.26E-05
850.	0.0	.002397	0.07	-3.34	-0.16	0.0	-4.551E-05	4.27E-05	4.374E-04	-3.45E-05	1.559E-05	9.11E-05	8.356E-04	-5.50E-05	-5.130E-06	-4.96E-07	1.361E-04	-1.27E-05
852.	0.0	.002397	0.08	-5.09	-0.14	0.0	-1.932E-04	-1.11E-05	7.906E-04	3.89E-05	-2.143E-04	-2.73E-05	1.468E-03	6.30E-05	-2.981E-05	-2.99E-05	2.018E-04	4.37E-05
STANDARD DEVIATIONS								4.32E-05		4.07E-05		7.86E-05		7.13E-05		4.31E-05		4.81E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							5.487E-05		-1.641E-04		6.560E-05		-3.005E-04		-1.259E-06		-6.739E-06	
LATERAL CYCLIC PITCH DERIVATIVES							1.427E-04		-4.873E-04		2.155E-04		-7.447E-04		1.546E-04		-1.519E-04	
RESIDUAL							1.178E-04		-1.541E-04		1.780E-04		-2.317E-04		1.605E-05		1.018E-04	
849.	0.0	.002397	0.98	-0.02	-0.15	0.0	3.075E-05	-4.54E-05	1.226E-06	2.41E-05	7.981E-05	-3.81E-05	3.709E-10	1.41E-05	1.643E-04	-2.59E-04	1.016E-04	-2.90E-05
851.	0.0	.002397	0.97	0.91	-0.62	0.0	6.599E-05	-1.14E-05	-8.937E-05	-1.75E-05	1.284E-04	8.06E-06	-2.091E-04	-2.20E-05	2.815E-04	-2.47E-04	1.063E-04	-3.40E-05
851.	0.0	.002397	0.99	1.84	-0.79	0.0	9.576E-05	-1.68E-05	-1.810E-04	9.80E-07	1.546E-04	-1.01E-05	-4.190E-04	1.60E-06	4.207E-04	-1.36E-04	1.104E-04	-3.19E-05
848.	0.0	.002397	0.98	3.75	-0.63	0.0	2.282E-04	-1.51E-05	-4.801E-04	3.44E-05	2.700E-04	-5.80E-05	-9.684E-04	4.03E-05	6.420E-04	1.59E-04	1.398E-04	6.68E-06
849.	0.0	.002397	0.96	5.53	-0.63	0.0	4.060E-04	5.59E-05	-8.223E-04	-2.50E-05	5.369E-04	7.53E-05	-1.558E-03	-2.78E-05	7.314E-04	2.82E-04	1.936E-04	6.56E-05
850.	0.0	.002397	0.99	-0.44	-0.03	0.0	2.298E-05	-4.17E-05	5.076E-05	3.21E-05	4.523E-05	-5.81E-05	1.435E-04	6.08E-05	2.250E-04	-1.76E-04	1.013E-04	-2.74E-05
851.	0.0	.002397	0.99	-1.39	-0.07	0.0	2.067E-05	1.72E-05	1.323E-04	-4.50E-05	4.256E-05	1.58E-05	3.113E-04	-5.75E-05	3.684E-04	-6.03E-05	1.097E-04	-2.27E-05
851.	0.0	.002397	0.99	-3.25	-0.00	0.0	-5.257E-05	4.57E-05	4.287E-04	-2.57E-05	-2.484E-05	7.59E-05	8.476E-04	-4.57E-05	6.414E-04	1.98E-04	1.478E-04	1.22E-05
850.	0.0	.002397	0.98	-5.01	-0.13	0.0	-2.051E-04	1.16E-05	7.787E-04	2.15E-05	-2.595E-04	-1.08E-05	1.469E-03	3.62E-05	7.458E-04	2.40E-04	2.040E-04	6.05E-05
STANDARD DEVIATIONS								4.10E-05		3.39E-05		5.79E-05		4.74E-05		2.53E-04		4.55E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							5.919E-05		-1.573E-04		7.410E-05		-2.910E-04		-1.760E-05		-2.702E-06	
LATERAL CYCLIC PITCH DERIVATIVES							1.148E-04		-2.082E-04		1.419E-04		-2.103E-04		-2.591E-04		-2.605E-05	
RESIDUAL							9.439E-05		-5.725E-05		1.405E-04		-5.208E-05		3.850E-04		1.267E-04	
854.	0.0	.002397	1.98	0.04	-0.15	0.0	4.638E-05	-6.76E-06	-2.837E-05	-2.33E-05	9.351E-05	2.76E-06	-7.884E-05	-9.57E-05	6.250E-04	-2.43E-04	1.122E-04	-2.54E-05
849.	0.0	.002397	1.96	0.84	-0.52	0.0	1.261E-04	4.54E-06	-1.284E-04	-1.07E-05	2.106E-04	1.38E-05	-3.049E-04	-4.23E-05	6.244E-04	-5.09E-04	1.119E-04	-5.29E-05
860.	0.0	.002397	1.96	1.75	-0.74	0.0	1.634E-04	-2.11E-05	-2.524E-04	8.92E-07	2.671E-04	-2.14E-05	-5.644E-04	-9.10E-06	8.253E-04	-4.54E-04	1.285E-04	-4.90E-05
852.	0.0	.002397	1.98	3.66	-0.59	0.0	2.314E-04	-3.67E-05	-5.291E-04	2.81E-05	2.594E-04	-1.28E-04	-1.069E-03	1.16E-05	1.359E-03	2.72E-04	1.621E-04	1.49E-05
850.	0.0	.002397	1.98	5.49	-0.77	0.0	4.153E-04	4.22E-05	-8.459E-04	-8.49E-06	6.298E-04	1.00E-04	-1.584E-03	4.42E-05	1.714E-03	5.55E-04	2.184E-04	7.07E-05
853.	0.0	.002397	1.97	-0.41	0.01	0.0	1.481E-05	-3.88E-06	7.028E-05	1.05E-05	2.565E-05	-1.32E-05	1.873E-04	2.08E-05	6.311E-04	-1.29E-04	1.164E-04	-1.07E-05
853.	0.0	.002397	1.97	-1.31	-0.05	0.0	-3.503E-05	-1.32E-05	2.182E-04	1.48E-05	-1.269E-05	-3.16E-06	4.758E-04	5.86E-05	6.312E-04	-2.11E-04	1.217E-04	-1.87E-05
852.	0.0	.002397	1.97	-3.15	-0.11	0.0	-5.929E-05	5.02E-05	4.469E-04	-4.66E-05	-2.065E-05	9.76E-05	8.884E-04	-4.85E-05	1.182E-03	2.27E-04	1.667E-04	5.45E-06
850.	0.0	.002397	1.97	-4.93	-0.07	0.0	-2.161E-04	-1.53E-05	8.051E-04	3.48E-05	-2.851E-04	-4.90E-05	1.510E-03	6.03E-05	1.485E-03	4.91E-04	2.389E-04	6.56E-05
STANDARD DEVIATIONS								3.31E-05		2.96E-05		8.07E-05		6.19E-05		4.58E-04		5.14E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							5.003E-05		-1.566E-04		6.367E-05		-2.866E-04		-3.664E-05		-8.504E-06	
LATERAL CYCLIC PITCH DERIVATIVES							-7.614E-05		-3.358E-05		-1.479E-04		1.347E-04		-7.504E-04		-9.094E-05	
RESIDUAL							4.012E-05		-4.055E-06		6.673E-05		4.740E-05		7.543E-04		1.247E-04	
845.	0.0	.002420	3.05	0.01	-0.13	0.0	2.118E-05	-3.13E-06	8.815E-06	-6.71E-06	9.266E-05	3.48E-05	-7.434E-06	-9.50E-05	1.283E-03	-7.30E-05	1.578E-04	-1.75E-05
851.	0.0	.002420	3.05	0.79	-0.52	0.0	1.545E-04	1.22E-05	-1.288E-04	-1.10E-05	2.395E-04	-8.20E-06	-3.481E-04	-1.17E-04	1.237E-03	-3.90E-04	1.610E-04	-5.19E-05
853.	0.0	.002420	3.04	1.73	-0.75	0.0	2.477E-04	1.16E-05	-2.852E-04	-8.30E-06	4.082E-04	3.75E-06	-6.256E-04	-6.81E-05	1.311E-03	-4.39E-04	1.737E-04	-5.39E-05
854.	0.0	.002420	3.05	2.70	-0.85	0.0	3.061E-04	-8.19E-07	-4.149E-04	2.57E-05	5.092E-04	-1.83E-05	-8.433E-04	2.12E-05	1.450E-03	-3.18E-04	1.858E-04	-4.08E-05
854.	0.0	.002420	3.05	3.64	-0.94	0.0	3.585E-04	-1.47E-05	-5.934E-04	5.04E-06	6.386E-04	-4.48E-06	-1.106E-03	5.18E-05	1.765E-03	-9.75E-06	2.149E-04	-9.18E-06
854.	0.0	.002420	3.05	4.48	-0.77	0.0	3.841E-04	1.57E-07	-7.342E-04	5.70E-06	6.693E-04	-5.48E-06	-1.357E-03	9.18E-06	1.936E-03	3.61E-04	2.380E-04	4.69E-05
855.	0.0	.002420	3.05	5.42	-0.91	0.0	4.606E-04	-1.31E-06	-9.183E-04	-1.84E-05	8.288E-04	2.07E-05	-1.631E-03	4.60E-05	2.178E-03	5.50E-04	2.745E-04	7.88E-05
857.	0.0	.002420	3.05	-0.44	-0.11	0.0	4.855E-06	8.24E-06	8.578E-05	-5.51E-06	1.566E-06	-6.88E-06	2.394E-04	1.55E-05	1.237E-03	-1.33E-04	1.613E-04	-1.77E-05
845.	0.0	.002420	3.06	-1.38	-0.05	0.0	-5.741E-05	6.57E-06	2.556E-04	5.84E-06	-1.037E-04	-4.75E-06	5.599E-04	4.76E-05	1.259E-03	-1.28E-04	1.701E-04	-1.50E-05
845.	0.0	.002420	3.06	-2.25	-0.02	0.0	-1.234E-04	-6.87E-06	4.230E-04	2.50E-05	-2.254E-04	-3.21E-05	8.407E-04	6.34E-05	1.338E-03	-8.33E-05	1.862E-04	-7.27E-06
848.	0.0	.002420	3.06	-3.18	-0.04	0.0	-1.782E-04	-1.73E-05	5.484E-04	-4.99E-06	-2.881E-04	-1.18E-05	1.042E-03	-1.17E-06	1.504E-03	8.92E-07	2.124E-04	3.29E-06
849.	0.0	.002420	3.05	-4.14	-0.14	0.0	-1.897E-04	9.88E-07	7.056E-04	-5.08E-06	-3.139E-04	2.43E-05	1.324E-03	2.40E-05	1.900E-03	2.42E-04	2.615E-04	2.59E-05
850.	0.0	.002420	3.06	-4.91	-0.07	0.0	-2.414E-04	4.41E-06	8.389E-04	-7.17E-06	-4.260E-04	8.45E-06	1.547E-03	2.70E-06	2.070E-03	4.19E-04	2.959E-04	5.83E-05
STANDARD DEVIATIONS								9.94E-06		1.44E-05		2.00E-05		6.31E-05		3.41E-04		4.55E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							5.239E-05		-1.686E-04		9.631E-05		-2.930E-04		-7.030E-05		-1.419E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.972E-04		3.874E-06		-2.931E-04		2.284E-04		-8.356E-04		-1.244E-04	
RESIDUAL							-2.537E-06		1.806E-05		1.772E-05		1.214E-04		1.246E-03		1.589E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_o	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
850.	0.0	.002397	3.95	-0.03	-0.15	0.0	3.910E-05	1.47E-05	-3.821E-06	-3.46E-05	6.824E-05	3.77E-05	-1.203E-05	-9.87E-05	2.340E-03	-2.39E-04	2.051E-04	-4.19E-05
849.	0.0	.002397	3.96	1.84	-0.56	0.0	2.850E-04	-1.19E-06	-3.393E-04	-2.17E-05	4.066E-04	-2.48E-05	-7.344E-04	-7.60E-05	2.531E-03	-4.17E-04	2.263E-04	-6.18E-05
847.	0.0	.002397	3.96	3.75	-0.51	0.0	4.715E-04	1.49E-05	-6.801E-04	2.32E-06	6.735E-04	2.94E-05	-1.327E-03	2.32E-05	2.805E-03	-1.84E-04	2.599E-04	-1.84E-05
848.	0.0	.002397	3.96	5.58	-0.23	0.0	5.592E-04	-1.72E-05	-1.011E-03	2.65E-05	7.508E-04	-1.81E-05	-1.918E-03	6.64E-05	3.458E-03	5.82E-04	3.245E-04	7.92E-05
851.	0.0	.002397	3.95	-1.32	-0.09	0.0	-1.135E-04	-3.62E-06	2.588E-04	-1.75E-05	-1.465E-04	-1.87E-05	5.559E-04	-1.29E-05	2.335E-03	-1.51E-04	2.259E-04	-1.77E-05
849.	0.0	.002397	3.96	-3.15	-0.27	0.0	-2.497E-04	4.83E-07	6.743E-04	4.56E-05	-2.981E-04	-8.27E-06	1.297E-03	8.14E-05	2.540E-03	1.21E-05	2.742E-04	8.64E-06
847.	0.0	.002397	3.97	-4.92	-0.63	0.0	-3.592E-04	-8.05E-06	9.724E-04	-6.32E-07	-3.808E-04	2.71E-06	1.334E-03	1.66E-05	3.086E-03	3.98E-04	3.575E-04	5.21E-05
STANDARD DEVIATIONS								1.43E-05		3.45E-05		3.02E-05		8.30E-05		4.43E-04		6.19E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							9.567E-05		-1.906E-04		1.231E-04		-3.671E-04		4.344E-05		-1.764E-06	
LATERAL CYCLIC PITCH DERIVATIVES							-1.922E-04		-1.512E-05		-3.492E-04		1.354E-04		-6.678E-04		-1.031E-04	
RESIDUAL							-8.687E-07		2.211E-05		3.033E-06		9.524E-05		2.482E-03		2.318E-04	
845.	0.0	.002397	5.98	0.05	-0.20	0.0	7.320E-05	2.56E-05	-4.087E-05	-3.91E-05	1.443E-04	8.25E-05	-9.093E-05	-1.02E-04	4.670E-03	-1.49E-04	3.913E-04	-4.95E-05
851.	0.0	.002397	5.97	1.92	-0.59	0.0	3.881E-04	-1.30E-06	-4.039E-04	-5.94E-05	6.106E-04	-2.27E-06	-8.466E-04	-1.25E-04	4.795E-03	-2.23E-04	4.037E-04	-6.99E-05
849.	0.0	.002397	5.98	3.82	-0.38	0.0	6.153E-04	-1.04E-05	-7.612E-04	2.00E-05	8.985E-04	-3.56E-05	-1.517E-03	2.59E-05	5.075E-03	-3.29E-05	4.443E-04	-6.92E-06
847.	0.0	.002397	5.98	5.59	-0.12	0.0	8.354E-04	3.63E-06	-1.152E-03	4.69E-05	1.215E-03	1.07E-05	-2.203E-03	1.13E-04	5.425E-03	2.48E-04	5.027E-04	7.91E-05
850.	0.0	.002397	5.98	-1.35	-0.15	0.0	-1.931E-04	-2.39E-05	2.493E-04	-3.96E-05	-2.976E-04	-4.22E-05	5.460E-04	-4.19E-05	4.708E-03	-7.47E-06	4.163E-04	-2.19E-05
848.	0.0	.002397	5.98	-3.19	-0.28	0.0	-4.116E-04	2.56E-06	7.443E-04	4.14E-05	-6.209E-04	-2.66E-05	1.428E-03	5.23E-05	4.589E-03	-2.62E-05	4.685E-04	1.49E-05
850.	0.0	.002397	5.98	-4.82	-0.79	0.0	-5.452E-04	2.38E-06	1.157E-03	2.98E-05	-7.178E-04	1.35E-05	2.200E-03	7.77E-05	4.794E-03	1.90E-04	5.590E-04	5.41E-05
STANDARD DEVIATIONS								1.99E-05		5.44E-05		5.21E-05		1.12E-04		2.07E-04		6.57E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.449E-04		-2.138E-04		2.117E-04		-4.180E-04		6.724E-05		-1.771E-06	
LATERAL CYCLIC PITCH DERIVATIVES							-1.917E-04		-1.500E-04		-3.988E-04		-1.312E-04		-1.876E-04		-9.344E-05	
RESIDUAL							-1.702E-06		-2.151E-05		-2.811E-05		4.777E-06		4.779E-03		4.221E-04	
852.	0.0	.002373	10.06	0.17	-0.44	0.0	1.594E-04	3.01E-05	-2.666E-05	-6.25E-05	2.934E-04	3.20E-05	-5.671E-05	-1.41E-04	1.108E-02	-1.27E-04	1.034E-03	-6.59E-05
845.	0.0	.002373	10.07	1.93	-0.70	0.0	5.079E-04	1.96E-05	-4.082E-04	-4.46E-05	8.943E-04	2.68E-05	-7.878E-04	-7.79E-05	1.115E-02	-1.03E-04	1.025E-03	-6.08E-05
854.	0.0	.002373	10.08	3.92	-0.55	0.0	8.664E-04	2.50E-05	-7.825E-04	-1.85E-06	1.511E-03	5.49E-05	-1.485E-03	-1.05E-05	1.120E-02	-2.32E-05	1.027E-03	-1.42E-05
855.	0.0	.002373	10.08	5.82	-0.40	0.0	1.130E-03	-4.84E-05	-1.121E-03	5.79E-05	1.935E-03	-8.27E-05	-2.086E-03	1.18E-04	1.133E-02	1.48E-04	1.082E-03	8.43E-05
857.	0.0	.002373	10.08	-1.35	-0.29	0.0	-1.663E-04	5.81E-06	3.756E-04	4.56E-06	-2.168E-04	2.93E-05	7.666E-04	1.81E-05	1.115E-02	-3.03E-05	1.097E-03	-1.90E-05
855.	0.0	.002373	10.08	-3.32	-0.50	0.0	-5.169E-04	-2.17E-06	7.768E-04	-6.54E-06	-8.416E-04	-2.54E-05	1.479E-03	-9.69E-06	1.127E-02	3.80E-05	1.182E-03	1.73E-05
850.	0.0	.002373	10.09	-4.70	-0.73	0.0	-7.756E-04	-3.00E-05	1.116E-03	5.29E-05	-1.234E-03	-3.48E-05	2.086E-03	1.02E-04	1.137E-02	9.83E-05	1.262E-03	5.83E-05
STANDARD DEVIATIONS								3.61E-05		5.50E-05		5.98E-05		1.13E-04		1.24E-04		6.96E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.866E-04		-2.155E-04		3.125E-04		-4.074E-04		-2.258E-06		-1.749E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.171E-04		7.622E-05		-2.139E-04		2.943E-04		-2.019E-04		-6.593E-05	
RESIDUAL							4.612E-05		1.056E-04		1.142E-04		2.831E-04		1.112E-02		1.073E-03	
853.	0.0	.002373	12.09	0.08	-0.39	0.0	1.468E-04	1.57E-05	3.020E-05	-8.70E-06	3.128E-04	6.42E-05	5.524E-05	-6.67E-05	1.455E-02	1.41E-05	1.548E-03	-4.02E-05
850.	0.0	.002373	12.09	1.92	-0.90	0.0	5.578E-04	3.03E-05	-3.864E-04	-5.40E-05	1.039E-03	4.91E-05	-7.112E-04	-1.46E-04	1.461E-02	4.55E-05	1.507E-03	-6.27E-05
850.	0.0	.002373	12.09	3.96	-1.03	0.0	8.320E-04	-8.01E-05	-7.349E-04	3.71E-05	1.591E-03	-1.20E-04	-1.246E-03	6.24E-05	1.448E-02	-5.67E-05	1.501E-03	-1.28E-05
850.	0.0	.002373	12.10	5.40	-0.92	0.0	1.213E-03	5.44E-05	-1.087E-03	8.16E-06	2.242E-03	6.82E-05	-1.816E-03	5.20E-05	1.453E-02	1.81E-05	1.534E-03	7.55E-05
852.	0.0	.002373	12.09	-1.47	-0.20	0.0	-2.145E-04	-4.11E-05	3.645E-04	-2.39E-06	-4.021E-04	-8.02E-05	7.106E-04	8.90E-06	1.453E-02	-1.82E-05	1.609E-03	-1.34E-05
850.	0.0	.002373	12.05	-3.37	-0.30	0.0	-5.012E-04	2.77E-06	7.953E-04	3.59E-06	-9.580E-04	-1.44E-05	1.435E-03	1.98E-05	1.459E-02	1.26E-06	1.696E-03	3.65E-06
853.	0.0	.002373	12.05	-4.82	-0.35	0.0	-7.420E-04	1.81E-05	1.130E-03	1.62E-05	-1.392E-03	3.31E-05	2.008E-03	4.99E-05	1.461E-02	-3.39E-06	1.793E-03	4.99E-05
STANDARD DEVIATIONS								5.61E-05		3.43E-05		9.12E-05		9.78E-05		3.92E-05		5.94E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.806E-04		-2.158E-04		3.392E-04		-3.746E-04		-1.539E-05		-3.234E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.283E-04		-6.426E-05		-2.339E-04		-2.347E-06		-9.567E-03		-8.080E-05	
RESIDUAL							6.580E-05		3.132E-05		1.287E-04		1.514E-04		1.450E-02		1.559E-03	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
851.	0.0	.002397	12.11	1.96	-0.33	0.0	5.540E-04	1.53E-05	-3.573E-04	-1.44E-05	1.018E-03	-1.11E-05	-7.631E-04	-6.65E-05	1.344E-02	-4.44E-05	1.241E-03	-3.60E-05
853.	0.0	.002397	12.11	2.88	-0.33	0.0	7.123E-04	1.15E-06	-5.588E-04	2.15E-05	1.310E-03	-3.98E-05	-1.033E-03	3.38E-06	1.354E-02	5.39E-05	1.242E-03	-5.92E-06
850.	0.0	.002397	12.10	3.72	-0.37	0.0	8.769E-04	7.59E-07	-7.530E-04	2.09E-06	1.711E-03	4.47E-05	-1.308E-03	3.84E-05	1.348E-02	2.26E-06	1.212E-03	-1.37E-05
855.	0.0	.002397	12.11	4.66	-0.28	0.0	1.032E-03	-6.19E-06	-9.725E-04	-3.22E-06	1.961E-03	9.82E-06	-1.685E-03	1.30E-05	1.346E-02	-2.36E-05	1.243E-03	5.43E-05
851.	0.0	.002397	12.11	-1.33	0.09	0.0	-1.598E-04	-2.35E-05	2.354E-04	-2.52E-05	-3.658E-04	-3.95E-05	4.984E-04	-1.67E-06	1.356E-02	3.87E-05	1.315E-03	-2.86E-05
849.	0.0	.002397	12.11	-3.17	0.23	0.0	-4.785E-04	2.29E-05	6.551E-04	1.95E-05	-1.010E-03	2.84E-05	1.167E-03	-8.69E-06	1.351E-02	-2.73E-05	1.389E-03	1.91E-07
849.	0.0	.002397	12.11	-5.09	-0.04	0.0	-8.347E-04	-8.53E-06	1.084E-03	-3.19E-07	-1.573E-03	7.46E-06	1.917E-03	2.21E-05	1.351E-02	4.28E-07	1.502E-03	2.98E-05
STANDARD DEVIATIONS								1.51E-05		2.06E-05		3.94E-05		4.08E-05		4.38E-05		3.93E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.881E-04		-2.140E-04		3.503E-04		-3.693E-04		6.566E-07		-3.122E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.345E-04		-1.382E-04		-4.805E-04		-3.656E-05		1.006E-04		-8.518E-05	
RESIDUAL							1.258E-04		-1.014E-05		1.834E-04		1.390E-05		1.351E-02		1.310E-03	
850.	0.0	.002397	14.13	0.09	-0.02	0.0	2.161E-04	3.30E-05	-6.414E-05	-8.97E-06	4.153E-04	9.78E-05	-1.487E-04	-8.54E-05	1.685E-02	-1.02E-05	1.804E-03	-4.86E-05
850.	0.0	.002397	14.14	1.91	-0.35	0.0	6.022E-04	5.57E-06	-3.580E-04	-6.09E-06	1.147E-03	1.46E-05	-6.754E-04	8.40E-06	1.674E-02	-3.77E-05	1.773E-03	-4.04E-05
850.	0.0	.002397	14.14	2.93	-0.23	0.0	7.360E-04	-2.47E-05	-6.110E-04	2.24E-05	1.388E-03	-2.67E-05	-1.152E-03	-1.87E-05	1.700E-02	1.33E-04	1.775E-03	9.70E-06
850.	0.0	.002397	14.14	3.75	-0.31	0.0	9.363E-04	3.78E-06	-7.686E-04	4.99E-06	1.756E-03	1.12E-05	-1.411E-03	2.60E-05	1.679E-02	-6.48E-05	1.739E-03	-2.52E-06
850.	0.0	.002397	14.14	4.66	-0.27	0.0	1.094E-03	1.13E-06	-1.034E-03	-1.12E-05	1.998E-03	-3.34E-05	-1.813E-03	6.14E-06	1.692E-02	1.41E-05	1.770E-03	6.69E-05
852.	0.0	.002397	14.14	-1.25	0.09	0.0	-1.030E-04	-5.87E-06	2.193E-04	8.59E-06	-2.289E-04	-1.89E-05	5.036E-04	6.86E-05	1.681E-02	-5.08E-05	1.858E-03	-3.49E-05
851.	0.0	.002397	14.13	-3.08	0.06	0.0	-4.390E-04	-1.09E-05	6.186E-04	-2.94E-05	-8.673E-04	-4.77E-05	1.172E-03	-9.80E-06	1.672E-02	-6.09E-05	1.942E-03	-2.18E-05
850.	0.0	.002397	14.14	-5.02	0.12	0.0	-8.036E-04	1.47E-06	1.095E-03	1.98E-05	-1.519E-03	3.06E-06	1.947E-03	4.83E-06	1.682E-02	7.75E-05	2.104E-03	7.18E-05
STANDARD DEVIATIONS								1.98E-05		2.05E-05		5.36E-05		5.15E-05		8.47E-05		5.55E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.875E-04		-2.315E-04		3.447E-04		-4.014E-04		3.422E-05		-3.738E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.152E-04		-3.712E-04		-5.635E-04		-3.350E-04		4.348E-04		-8.734E-05	
RESIDUAL							1.618E-04		-4.370E-05		2.745E-04		-3.605E-05		1.686E-02		1.854E-03	
852.	0.0	.002397	16.17	0.22	-0.10	0.0	2.816E-04	3.30E-06	-1.442E-05	-1.86E-06	4.965E-04	3.39E-05	-1.148E-05	-6.06E-05	2.028E-02	1.30E-04	2.490E-03	-2.79E-05
850.	0.0	.002397	16.17	1.96	-0.39	0.0	6.931E-04	2.14E-05	-4.272E-04	-2.53E-05	1.227E-03	2.66E-05	-7.096E-04	-6.98E-05	2.002E-02	-1.50E-04	2.428E-03	-7.58E-05
850.	0.0	.002397	16.17	2.96	-0.46	0.0	8.774E-04	1.43E-07	-5.665E-04	5.97E-05	1.571E-03	4.34E-06	-9.796E-04	1.22E-04	2.002E-02	-1.14E-04	2.473E-03	-2.24E-06
847.	0.0	.002397	16.16	3.88	-0.48	0.0	1.037E-03	-1.52E-05	-8.688E-04	-3.53E-05	1.836E-03	-3.96E-05	-1.493E-03	-3.52E-05	2.026E-02	1.83E-04	2.516E-03	7.62E-05
852.	0.0	.002397	16.15	-1.20	0.15	0.0	-4.108E-05	7.22E-06	3.160E-04	9.76E-06	-1.528E-04	7.40E-07	6.998E-04	3.13E-05	1.999E-02	-1.35E-04	2.504E-03	-2.10E-05
851.	0.0	.002397	16.16	-3.13	0.13	0.0	-4.218E-04	-1.28E-05	7.345E-04	-7.03E-06	-7.860E-04	-2.61E-05	1.407E-03	1.20E-05	2.038E-02	8.64E-05	2.665E-03	5.08E-05
STANDARD DEVIATIONS								1.87E-05		4.32E-05		3.71E-05		9.28E-05		1.93E-04		7.16E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.892E-04		-2.255E-04		3.207E-04		-3.798E-04		-7.551E-05		-4.414E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.255E-04		-7.320E-06		-6.275E-04		3.113E-04		-5.481E-04		-2.166E-04	
RESIDUAL							2.131E-04		3.744E-05		3.277E-04		1.657E-04		2.012E-02		2.506E-03	
853.	0.0	.002397	18.25	0.21	-0.11	0.0	2.400E-04	2.42E-05	-2.159E-04	-3.94E-05	4.639E-04	9.09E-05	-2.953E-04	-6.82E-05	2.354E-02	2.41E-04	3.314E-03	-1.07E-04
845.	0.0	.002397	18.22	1.00	-0.44	0.0	3.651E-04	-4.83E-06	-3.919E-04	-7.91E-06	7.618E-04	4.70E-05	-5.963E-04	-6.36E-05	2.354E-02	1.75E-04	3.352E-03	-8.00E-05
857.	0.0	.002397	18.22	2.10	-0.39	0.0	5.736E-04	2.57E-05	-6.057E-04	3.82E-05	9.992E-04	7.41E-06	-1.066E-03	-1.07E-04	2.335E-02	1.71E-04	3.374E-03	-3.64E-05
853.	0.0	.002397	18.21	3.06	-0.68	0.0	7.467E-04	2.38E-05	-8.951E-04	-4.23E-06	1.390E-03	2.79E-05	-1.351E-03	-4.96E-08	2.303E-02	-1.69E-04	3.373E-03	-4.17E-05
851.	0.0	.002397	18.21	4.13	-0.50	0.0	8.706E-04	-1.27E-05	-1.101E-03	3.76E-05	1.565E-03	-2.02E-05	-1.737E-03	2.44E-05	2.286E-02	-8.62E-05	3.434E-03	5.04E-05
845.	0.0	.002397	18.20	4.79	-0.80	0.0	9.780E-04	-3.45E-05	-1.340E-03	-2.90E-05	1.799E-03	-7.86E-05	-1.919E-03	1.12E-04	2.290E-02	-1.23E-04	3.510E-03	1.16E-04
851.	0.0	.002397	18.23	-1.24	0.24	0.0	-3.830E-05	7.62E-06	1.492E-04	-3.96E-05	-1.159E-04	3.69E-05	3.534E-04	-2.24E-05	2.332E-02	1.04E-05	3.335E-03	-8.54E-05
850.	0.0	.002397	18.20	-2.34	0.17	0.0	-2.403E-04	-2.00E-05	4.819E-04	3.18E-05	-4.611E-04	-3.51E-05	9.285E-04	1.23E-04	2.366E-02	1.54E-04	3.500E-03	5.60E-05
850.	0.0	.002397	18.20	-3.35	0.30	0.0	-4.076E-04	-1.33E-05	7.115E-04	1.25E-05	-8.258E-04	-7.63E-05	1.227E-03	2.10E-05	2.321E-02	-3.73E-04	3.580E-03	1.29E-04
STANDARD DEVIATIONS								2.60E-05		3.67E-05		6.62E-05		9.37E-05		2.35E-04		1.03E-04
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.626E-04		-2.358E-04		2.711E-04		-3.914E-04		-1.439E-04		-1.676E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-7.591E-05		5.259E-05		-3.813E-04		4.706E-05		-5.516E-04		-7.246E-05	
RESIDUAL							1.734E-04		-1.206E-04		2.737E-04		-1.200E-04		2.327E-02		3.417E-03	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
846.	0.C	.002373	0.05	0.04	-0.24	0.0	5.515E-06	3.38E-05	-8.556E-06	4.21E-05	2.405E-05	2.64E-05	-2.546E-05	5.63E-05	1.130E-04	-7.58E-06	1.201E-04	-9.14E-07
848.	0.C	.002373	0.04	0.23	0.16	0.0	-1.395E-05	3.56E-06	-7.784E-06	3.03E-05	-5.120E-05	-1.70E-05	-1.952E-05	3.84E-05	1.330E-04	6.22E-05	1.150E-04	-2.20E-05
848.	C.C	.002373	0.05	0.51	1.08	0.0	-7.797E-05	-1.53E-05	-3.147E-05	7.62E-06	-2.140E-04	-2.71E-05	-3.859E-05	4.52E-06	6.865E-05	7.02E-05	1.123E-04	-4.58E-05
847.	0.C	.002373	0.06	0.50	3.04	0.0	-3.411E-04	2.30E-05	-1.150E-04	2.16E-05	-7.299E-04	3.86E-05	-1.032E-04	4.50E-05	8.302E-03	1.04E-05	1.410E-04	-9.43E-06
845.	0.0	.002373	0.05	0.42	4.92	0.0	-6.999E-04	-1.34E-05	-2.988E-04	-4.75E-05	-1.373E-03	-1.17E-05	-3.407E-04	-7.38E-05	-9.146E-05	-9.34E-05	1.921E-04	5.61E-05
851.	0.C	.002373	0.08	-0.02	-1.03	0.0	7.134E-05	-3.34E-06	-1.332E-05	5.71E-06	2.142E-04	5.31E-06	-3.015E-05	2.21E-05	1.525E-04	5.47E-05	1.104E-04	-8.77E-06
853.	C.C	.002373	0.08	-0.04	-1.99	0.0	2.009E-04	-1.46E-05	2.934E-06	-2.37E-05	4.784E-04	-5.00E-06	-3.805E-05	-3.16E-05	1.450E-04	-2.66E-06	1.149E-04	-5.88E-06
850.	C.0	.002373	0.07	0.15	-3.66	0.0	5.421E-04	-3.40E-05	1.056E-04	-4.50E-05	1.060E-03	-4.25E-05	4.805E-05	-6.75E-05	3.258E-05	-7.53E-05	1.430E-04	-1.11E-06
845.	0.C	.002373	0.07	0.26	-5.79	0.0	9.354E-04	2.42E-05	2.794E-04	8.85E-06	1.767E-03	3.30E-05	2.870E-04	2.62E-05	8.072E-05	-1.45E-05	1.985E-04	3.79E-05
STANDARD DEVIATIONS								2.65E-05		3.69E-05		3.24E-05		6.05E-05		6.73E-05		3.50E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.634E-04		1.656E-04		4.293E-04		2.254E-04		-2.410E-04		8.761E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.544E-04		-5.111E-05		-2.952E-04		-5.250E-05		-5.288E-06		-3.546E-06	
RESIDUAL							-7.820E-05		-6.386E-05		-8.766E-05		-1.025E-04		1.282E-04		1.170E-04	
850.	0.C	.002373	1.04	0.04	-0.21	0.0	3.327E-05	5.29E-05	-1.483E-05	5.95E-05	9.112E-05	7.92E-05	-4.786E-05	6.80E-05	4.681E-04	-6.81E-05	1.095E-04	-4.84E-06
850.	0.C	.002373	1.05	0.22	0.13	0.0	-6.458E-06	2.27E-05	-3.027E-05	3.21E-05	-5.379E-05	-4.13E-06	-8.415E-05	2.78E-05	3.697E-04	-2.22E-04	1.091E-04	-2.10E-05
850.	C.C	.002373	1.05	0.54	0.99	0.0	-9.918E-05	-1.41E-05	-5.143E-05	4.87E-06	-2.679E-04	-3.58E-05	-9.700E-05	-7.61E-06	4.763E-04	-2.57E-04	1.128E-04	-4.23E-05
850.	0.C	.002373	1.05	0.70	2.98	0.0	-3.577E-04	-2.60E-06	-1.292E-04	1.43E-05	-7.687E-04	1.58E-05	-1.755E-04	1.92E-05	7.562E-04	3.28E-05	1.293E-04	-2.32E-05
845.	C.C	.002373	1.06	0.47	4.94	0.0	-7.189E-04	-1.08E-06	-3.418E-04	-4.31E-05	-1.419E-03	1.08E-06	-4.494E-04	-4.35E-05	7.965E-04	2.79E-04	1.800E-04	7.09E-05
850.	0.0	.002373	1.07	0.05	-1.07	0.0	1.056E-04	-1.02E-05	-2.309E-05	1.15E-07	2.703E-04	2.01E-06	-5.146E-05	1.80E-05	5.147E-04	-6.37E-05	1.132E-04	-1.02E-05
845.	C.C	.002373	1.07	0.03	-1.98	0.0	1.962E-04	-5.75E-05	-6.006E-06	-3.28E-05	4.567E-04	-7.83E-05	-7.108E-05	-6.54E-05	6.603E-04	4.51E-05	1.117E-04	-1.88E-05
851.	0.C	.002373	1.06	0.09	-3.83	0.0	5.385E-04	-1.58E-05	5.658E-05	-4.71E-05	1.077E-03	-1.76E-05	7.705E-05	-7.10E-05	8.624E-04	1.40E-04	1.556E-04	1.41E-06
851.	0.0	.002373	1.08	0.25	-5.83	0.0	9.322E-04	2.57E-05	3.009E-04	1.22E-05	1.765E-03	3.77E-05	3.773E-04	3.45E-05	1.005E-03	1.10E-04	2.364E-04	4.80E-05
STANDARD DEVIATIONS								3.61E-05		4.10E-05		5.11E-05		6.01E-05		1.99E-04		4.20E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.428E-04		1.746E-04		2.266E-04		2.714E-04		4.578E-04		1.037E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-1.557E-04		-5.608E-05		-2.967E-04		-7.504E-05		-4.518E-05		-9.670E-06	
RESIDUAL							-6.225E-05		-5.349E-05		-6.015E-05		-1.624E-04		5.071E-04		1.063E-04	
852.	0.0	.002373	2.01	0.07	-0.22	0.0	3.465E-05	2.34E-05	-1.663E-05	3.14E-05	1.012E-04	3.59E-05	-5.730E-05	4.39E-05	8.334E-04	-6.55E-05	1.083E-04	-3.19E-07
855.	C.C	.002373	2.02	0.23	0.09	0.0	-2.732E-05	-1.05E-05	-5.203E-05	8.85E-06	-7.997E-05	-6.19E-05	-1.269E-04	-8.53E-06	8.312E-04	-2.63E-04	1.157E-04	-1.51E-05
851.	0.C	.002373	2.02	0.49	0.99	0.0	-1.340E-04	-1.12E-05	-1.250E-04	-2.19E-05	-3.358E-04	-6.59E-05	-2.113E-04	-3.74E-05	9.057E-04	-4.76E-04	1.196E-04	-4.21E-05
852.	0.0	.002373	2.03	0.69	2.99	0.0	-4.085E-04	7.70E-06	-1.943E-04	1.54E-05	-8.503E-04	1.90E-05	-2.745E-04	3.82E-05	1.391E-03	-9.76E-05	1.398E-04	-2.64E-05
850.	0.C	.002373	2.03	0.62	4.92	0.0	-7.428E-04	-3.46E-06	-3.344E-04	-1.32E-05	-1.442E-03	2.95E-05	-4.826E-04	-2.59E-05	1.689E-03	4.90E-04	1.788E-04	5.55E-05
851.	0.C	.002373	2.04	0.07	-1.07	0.0	1.636E-04	1.59E-05	2.399E-05	2.43E-05	3.768E-04	5.10E-05	1.962E-05	5.91E-05	8.881E-04	-9.02E-05	1.154E-04	-6.34E-06
851.	0.0	.002373	2.04	-0.01	-2.05	0.0	2.800E-04	-1.50E-05	2.458E-05	-2.82E-05	6.071E-04	-1.53E-05	-1.093E-05	-4.05E-05	1.168E-03	2.13E-04	1.348E-04	1.18E-05
850.	C.C	.002373	2.03	0.19	-3.93	0.0	6.050E-04	-2.23E-05	1.225E-04	-4.26E-05	1.191E-03	-2.91E-05	1.075E-04	-6.68E-05	1.616E-03	2.05E-04	1.864E-04	6.69E-07
853.	C.C	.002373	2.03	0.38	-5.85	0.0	9.812E-04	1.54E-05	3.056E-04	2.60E-05	1.866E-03	3.67E-05	3.597E-04	3.79E-05	1.551E-03	8.44E-05	2.710E-04	2.24E-05
STANDARD DEVIATIONS								1.86E-05		3.12E-05		5.12E-05		5.25E-05		3.30E-04		3.28E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.490E-04		3.217E-05		9.272E-05		3.807E-05		1.444E-03		1.738E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-1.616E-04		-5.650E-05		-3.086E-04		-7.314E-05		-9.409E-05		-1.549E-05	
RESIDUAL							-3.568E-05		-6.252E-05		-1.009E-05		-1.202E-04		7.712E-04		9.235E-05	
849.	0.C	.002373	4.13	0.19	-0.35	0.0	6.903E-05	-2.73E-05	-2.254E-05	-1.50E-05	1.461E-04	-7.52E-05	-3.897E-05	-1.72E-05	2.620E-03	-1.76E-04	2.284E-04	-1.10E-05
849.	0.C	.002373	4.13	0.34	0.31	0.0	-6.792E-05	-4.06E-05	-1.063E-04	-1.69E-05	-1.199E-04	-7.63E-05	-2.234E-04	-5.73E-05	2.600E-03	-2.95E-04	2.107E-04	-3.80E-05
847.	C.0	.002373	4.13	0.56	1.05	0.0	-2.058E-04	-3.81E-05	-2.113E-04	-1.94E-05	-4.229E-04	-6.10E-05	-4.068E-04	-5.54E-05	2.609E-03	-4.60E-04	2.125E-04	-5.69E-05
850.	C.C	.002373	4.13	0.60	3.10	0.0	-5.168E-04	3.05E-05	-3.859E-04	-6.54E-06	-1.006E-03	5.23E-05	-6.669E-04	6.28E-06	2.807E-03	-1.58E-04	2.188E-04	-1.23E-05
846.	C.C	.002373	4.12	0.53	5.07	0.0	-8.829E-04	2.52E-05	-5.148E-04	2.40E-05	-1.654E-03	3.32E-05	-8.971E-04	6.14E-05	3.536E-03	7.50E-04	2.654E-04	9.04E-05
850.	0.C	.002373	4.12	0.19	-1.08	0.0	2.213E-04	-8.89E-06	4.732E-05	-9.29E-06	4.823E-04	1.88E-05	7.665E-05	-1.28E-05	2.687E-03	-1.58E-04	2.342E-04	-2.08E-05
850.	0.C	.002373	4.12	0.16	-2.06	0.0	4.536E-04	4.22E-05	1.667E-04	1.91E-05	8.828E-04	8.41E-05	2.646E-04	1.72E-05	2.783E-03	-1.02E-04	2.536E-04	-1.80E-05
850.	0.C	.002373	4.12	0.30	-4.05	0.0	7.748E-04	-6.50E-07	3.459E-04	4.79E-05	1.448E-03	3.46E-05	5.755E-04	6.94E-05	3.151E-03	-2.33E-05	3.312E-04	-8.24E-06
849.	C.C	.002373	4.12	0.21	-5.95	0.0	1.146E-03	1.76E-05	4.568E-04	-2.38E-05	2.066E-03	-1.06E-05	8.166E-04	-7.61E-06	3.802E-03	5.83E-04	4.414E-04	7.48E-05
STANDARD DEVIATIONS								3.56E-05		2.83E-05		6.80E-05		5.20E-05		4.75E-04		5.71E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.821E-05		-1.712E-04		-3.300E-04		-3.132E-04		1.034E-03		1.687E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-1.843E-04		-8.761E-05		-3.320E-04		-1.519E-04		-7.234E-05		-2.218E-05	
RESIDUAL							3.539E-05		-4.781E-06		1.695E-04		-1.388E-05		2.569E-03		1.987E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
845.	0.0	.002373	6.09	0.17	-0.33	0.0	1.032E-04	-6.85E-06	-2.071E-05	-4.06E-07	2.374E-04	-2.56E-07	-6.616E-05	-6.34E-07	5.036E-03	-1.05E-06	3.796E-04	-1.50E-07
848.	0.0	.002373	6.08	0.61	1.17	0.0	-1.440E-04	2.55E-06	-2.743E-04	1.52E-05	-3.239E-04	9.64E-06	-5.298E-04	2.37E-05	5.079E-03	3.96E-05	3.518E-04	5.58E-06
850.	0.0	.002373	6.09	0.64	3.16	0.0	-5.370E-04	-4.82E-06	-5.573E-04	-2.88E-05	-1.023E-03	-1.83E-05	-1.005E-03	-4.48E-05	5.166E-03	-7.50E-05	3.405E-04	-1.06E-05
849.	0.0	.002373	6.08	0.65	5.21	0.0	-9.298E-04	2.35E-06	-7.585E-04	1.40E-05	-1.689E-03	8.90E-06	-1.353E-03	2.18E-05	5.489E-03	3.65E-05	3.623E-04	5.14E-06
STANDARD DEVIATIONS								5.54E-06		3.55E-05		2.25E-05		5.52E-05		9.24E-05		1.30E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.033E-04		-2.117E-04		-1.482E-04		-4.324E-04		-3.603E-04		-8.952E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.960E-04		-1.173E-04		-3.364E-04		-1.983E-04		1.068E-04		3.783E-06	
RESIDUAL							2.082E-05		-2.368E-05		1.509E-04		-5.673E-05		5.133E-03		3.961E-04	
851.	0.0	.002420	6.08	0.32	0.25	0.0	6.841E-05	3.59E-05	-1.427E-04	-6.91E-06	1.170E-04	6.22E-05	-2.832E-04	-4.03E-05	3.991E-03	-1.55E-04	3.836E-04	-5.42E-05
853.	0.0	.002420	6.06	0.53	1.09	0.0	-1.326E-04	2.04E-06	-2.916E-04	-1.42E-05	-2.943E-04	-2.63E-05	-5.306E-04	-1.59E-05	4.018E-03	-5.33E-05	3.789E-04	-4.64E-05
854.	0.0	.002420	6.07	0.76	3.04	0.0	-5.257E-04	-2.11E-05	-5.651E-04	1.12E-05	-9.594E-04	2.37E-06	-1.026E-03	1.12E-05	3.917E-03	-1.11E-04	3.567E-04	-1.43E-05
853.	0.0	.002420	6.07	0.55	5.10	0.0	-8.765E-04	7.14E-06	-8.056E-04	-3.30E-06	-1.635E-03	-3.03E-05	-1.383E-03	2.14E-05	4.320E-03	3.84E-04	3.755E-04	1.06E-04
856.	0.0	.002420	6.07	0.12	-1.09	0.0	2.524E-04	-3.23E-05	7.365E-05	-9.79E-08	5.288E-04	-1.25E-05	1.186E-04	-1.51E-05	3.556E-03	-2.47E-04	4.247E-04	-4.66E-05
854.	0.0	.002420	6.08	0.10	-2.11	0.0	4.875E-04	1.34E-05	2.243E-04	1.60E-05	9.394E-04	5.69E-05	3.763E-04	1.01E-05	4.152E-03	-9.52E-05	4.759E-04	-3.27E-05
854.	0.0	.002420	6.08	0.11	-4.05	0.0	8.130E-04	-2.29E-05	4.647E-04	9.16E-06	1.502E-03	-2.32E-05	8.182E-04	3.03E-05	4.309E-03	-2.34E-05	5.745E-04	-1.15E-05
853.	0.0	.002420	6.08	-0.01	-5.99	0.0	1.196E-03	-6.85E-06	7.157E-04	-1.36E-05	2.129E-03	-6.82E-05	1.274E-03	6.36E-06	4.640E-03	2.24E-04	7.127E-04	6.26E-05
850.	0.0	.002420	6.08	0.16	-6.04	0.0	1.227E-03	2.07E-05	7.042E-04	1.79E-06	2.216E-03	3.90E-05	1.197E-03	-8.20E-06	4.537E-03	1.17E-04	7.064E-04	3.72E-05
STANDARD DEVIATIONS								2.68E-05		1.23E-05		5.10E-05		2.52E-05		2.33E-04		6.48E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-2.988E-05		-1.881E-04		-2.066E-04		-4.142E-04		1.171E-05		9.745E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.865E-04		-1.285E-04		-3.322E-04		-2.198E-04		-4.394E-05		-3.924E-05	
RESIDUAL							8.436E-05		-4.353E-05		2.035E-04		-5.543E-05		4.153E-03		4.163E-04	
850.	0.0	.002420	8.04	0.04	-0.23	0.0	1.456E-04	2.56E-05	-4.562E-05	-8.51E-06	3.118E-04	6.70E-05	-9.467E-05	-2.43E-05	6.282E-03	-3.84E-05	6.715E-04	-3.82E-05
851.	0.0	.002420	8.05	0.19	0.16	0.0	-3.177E-05	-6.47E-05	-1.480E-04	-2.27E-05	-1.085E-04	-2.08E-04	-3.055E-04	-7.67E-05	6.122E-03	-2.25E-04	6.461E-04	-4.83E-05
852.	0.0	.002420	8.05	0.51	1.08	0.0	-1.116E-04	-6.20E-07	-3.452E-04	-1.97E-05	-2.628E-04	-1.59E-05	-6.323E-04	-3.78E-05	6.360E-03	-4.15E-05	6.274E-04	-3.05E-05
852.	0.0	.002420	8.05	0.60	3.18	0.0	-5.082E-04	7.04E-06	-6.651E-04	1.09E-05	-9.685E-04	3.21E-05	-1.187E-03	1.24E-05	6.352E-03	-1.20E-05	5.800E-04	-7.15E-07
851.	0.0	.002420	8.05	0.43	5.25	0.0	-9.093E-04	2.04E-05	-5.570E-04	1.44E-05	-1.700E-03	3.37E-05	-1.651E-03	5.66E-05	6.403E-03	1.41E-04	5.602E-04	5.36E-05
852.	0.0	.002420	8.06	0.14	-2.11	0.0	5.049E-04	1.25E-05	2.507E-04	9.50E-06	9.930E-04	8.08E-05	4.115E-04	1.29E-06	6.449E-03	5.08E-05	7.874E-04	1.00E-05
851.	0.0	.002420	8.06	0.05	-4.18	0.0	9.127E-04	1.59E-05	6.011E-04	1.61E-05	1.669E-03	1.05E-05	1.080E-03	6.85E-05	6.559E-03	1.25E-04	9.079E-04	5.41E-05
STANDARD DEVIATIONS								4.70E-05		2.03E-05		1.19E-04		6.32E-05		1.52E-04		5.15E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							5.301E-05		-1.851E-04		-5.114E-05		-3.556E-04		2.523E-04		-9.152E-06	
LATERAL CYCLIC PITCH DERIVATIVES							-1.953E-04		-1.575E-04		-3.576E-04		-2.738E-04		-2.635E-05		-3.643E-05	
RESIDUAL							7.357E-05		-6.474E-05		1.661E-04		-1.169E-04		6.303E-03		7.019E-04	
845.	0.0	.002420	10.06	0.18	-0.29	0.0	1.751E-04	-5.56E-06	-4.329E-05	-4.06E-06	3.893E-04	-3.70E-05	-1.062E-04	-1.57E-05	8.894E-03	-1.19E-05	1.060E-03	-2.19E-06
852.	0.0	.002420	10.06	0.52	1.11	0.0	-5.912E-05	1.12E-05	-3.787E-04	-1.14E-06	-2.021E-04	-1.55E-05	-6.843E-04	-2.18E-05	8.770E-03	-1.44E-04	9.675E-04	-8.10E-05
853.	0.0	.002420	10.07	0.59	3.21	0.0	-5.039E-04	-2.23E-05	-7.450E-04	-1.12E-05	-9.894E-04	-9.69E-05	-1.319E-03	-1.22E-05	8.820E-03	-5.49E-06	8.980E-04	-4.80E-06
852.	0.0	.002420	10.07	0.74	5.33	0.0	-8.888E-04	3.33E-06	-1.122E-03	6.23E-06	-1.587E-03	5.73E-05	-1.980E-03	1.59E-05	8.864E-03	1.10E-04	8.425E-04	6.58E-05
853.	0.0	.002420	10.07	0.22	-2.16	0.0	5.800E-04	2.32E-05	2.655E-04	2.00E-05	1.111E-03	1.08E-04	4.749E-04	4.32E-05	8.548E-03	-6.24E-05	1.196E-03	-2.80E-05
851.	0.0	.002420	10.08	0.13	-4.25	0.0	9.769E-04	1.24E-05	6.015E-04	-7.74E-06	1.781E-03	6.76E-05	1.084E-03	3.73E-06	9.178E-03	8.42E-05	1.370E-03	5.61E-06
852.	0.0	.002420	10.08	0.04	-6.36	0.0	1.356E-03	-2.24E-05	5.768E-04	-2.07E-06	2.351E-03	-8.37E-05	1.727E-03	-1.31E-05	9.209E-03	2.97E-05	1.551E-03	4.44E-05
STANDARD DEVIATIONS								2.15E-05		1.27E-05		9.69E-05		2.82E-05		1.06E-04		5.85E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							8.030E-05		-3.359E-04		-4.923E-04		-4.922E-04		2.306E-04		2.882E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-1.990E-04		-1.598E-04		-3.193E-04		-2.901E-04		-5.015E-05		-7.963E-05	
RESIDUAL							1.089E-04		-2.407E-05		4.229E-04		-8.546E-05		8.850E-03		9.876E-04	
849.	0.0	.002420	12.04	0.17	-0.38	0.0	2.289E-04	1.41E-06	-4.631E-05	2.35E-05	4.441E-04	2.85E-07	-7.741E-05	4.03E-05	1.174E-02	-3.83E-05	1.512E-03	-3.90E-05
849.	0.0	.002420	12.05	0.55	1.20	0.0	-8.918E-05	-3.10E-05	-3.959E-04	-6.23E-06	-2.234E-04	-1.02E-04	-7.264E-04	-3.75E-05	1.170E-02	-1.40E-05	1.396E-03	-6.26E-05
852.	0.0	.002420	12.06	0.62	3.38	0.0	-4.686E-04	-5.30E-06	-7.797E-04	6.73E-06	-8.826E-04	-7.36E-05	-1.380E-03	1.41E-05	1.149E-02	-1.82E-04	1.267E-03	-8.63E-06
852.	0.0	.002420	12.05	0.81	5.49	0.0	-8.383E-04	1.56E-05	-1.205E-03	-2.00E-05	-1.430E-03	7.32E-05	-2.117E-03	-1.30E-05	1.181E-02	1.94E-04	1.185E-03	7.13E-05
853.	0.0	.002420	12.06	0.09	-2.36	0.0	6.070E-04	1.13E-05	2.989E-04	4.95E-06	1.180E-03	1.05E-04	5.166E-04	-1.29E-05	1.180E-02	-1.81E-05	1.704E-03	-1.02E-05
856.	0.0	.002420	12.06	0.14	-4.48	0.0	1.022E-03	2.84E-05	7.073E-04	3.75E-05	1.847E-03	1.24E-04	1.265E-03	6.74E-05	1.177E-02	-8.26E-05	1.890E-03	-1.63E-05
853.	0.0	.002420	12.06	-0.13	-6.09	0.0	1.268E-03	-2.03E-05	5.374E-04	-4.65E-05	2.148E-03	-1.27E-04	1.699E-03	-5.84E-05	1.204E-02	1.42E-04	2.061E-03	6.55E-05
STANDARD DEVIATIONS								2.54E-05		3.40E-05		1.26E-04		5.37E-05		1.58E-04		6.18E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.340E-05		-5.046E-05		-1.898E-04		-1.680E-04		-1.061E-04		1.265E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-1.876E-04		-1.758E-04		-3.107E-04		-3.196E-04		-1.577E-05		-8.797E-05	
RESIDUAL							1.495E-04		-1.234E-04		3.571E-04		-2.117E-04		1.179E-02		1.495E-03	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_o	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
550.	0.0	.002373	0.09	0.01	-0.32	0.0	1.081E-06	-6.29E-05	-3.558E-05	4.17E-05	5.075E-05	-5.28E-05	-5.559E-05	3.37E-05	2.190E-04	2.68E-05	-7.710E-05	-1.59E-05
555.	0.0	.002373	0.09	1.09	-0.64	0.0	5.070E-05	-5.64E-05	-1.336E-04	3.49E-05	7.055E-05	-7.84E-05	-1.992E-04	3.60E-05	1.783E-04	5.59E-05	-7.598E-05	-4.97E-05
555.	0.0	.002373	0.10	2.10	-0.72	0.0	6.894E-05	-6.58E-05	-2.677E-04	1.12E-04	6.964E-05	-1.10E-04	-3.870E-04	1.51E-04	1.743E-04	6.55E-05	-7.690E-05	-4.95E-05
553.	0.0	.002373	0.10	4.10	-0.69	0.0	1.792E-04	4.11E-07	-7.358E-04	1.58E-04	1.696E-04	-6.27E-05	-1.053E-03	2.13E-04	7.282E-05	-5.07E-05	-3.896E-05	1.78E-05
552.	0.0	.002373	0.11	5.79	-1.02	0.0	3.329E-04	5.66E-05	-1.330E-03	-1.94E-04	4.698E-04	1.75E-04	-1.872E-03	-2.51E-04	-1.116E-05	-6.51E-05	3.532E-05	6.33E-05
554.	0.0	.002373	0.11	-0.65	-0.23	0.0	2.249E-05	-2.13E-05	1.274E-05	-2.48E-05	6.829E-05	-1.29E-05	5.661E-05	-2.10E-05	2.662E-04	5.58E-05	-8.190E-05	-1.53E-05
551.	0.0	.002373	0.11	-1.64	-0.12	0.0	4.121E-05	2.68E-05	1.387E-04	-8.01E-05	9.236E-05	4.37E-05	2.331E-04	-1.07E-04	2.360E-04	2.18E-06	-8.161E-05	-9.69E-06
557.	0.0	.002373	0.10	-3.49	-0.12	0.0	3.070E-05	5.86E-05	5.734E-04	-1.12E-04	7.835E-05	7.94E-05	8.523E-04	-1.45E-04	1.975E-04	-2.84E-05	-4.765E-05	9.01E-07
553.	0.0	.002373	0.11	-5.24	-0.01	0.0	-5.035E-05	2.40E-05	1.126E-03	6.41E-05	-3.474E-05	1.89E-05	1.626E-03	9.03E-05	1.822E-04	-6.22E-05	1.459E-05	5.80E-05
STANDARD DEVIATIONS								6.58E-05		1.30E-04		1.04E-04		1.71E-04		6.16E-05		4.69E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.295E-05		-2.505E-04		2.691E-05		-3.535E-04		3.814E-06		-1.239E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-5.687E-05		-5.610E-04		-5.066E-05		-7.382E-04		2.304E-04		-1.506E-04	
RESIDUAL							4.544E-05		-2.573E-04		8.695E-05		-3.260E-04		2.668E-04		-1.099E-04	
552.	0.0	.002373	1.03	0.20	-0.27	0.0	4.030E-05	-3.62E-05	-3.797E-05	7.94E-05	5.975E-05	-8.02E-05	-8.360E-05	6.19E-05	5.343E-04	-1.41E-04	-9.899E-05	-3.35E-05
552.	0.0	.002373	1.03	1.04	-0.64	0.0	4.914E-05	-3.22E-05	-1.456E-04	5.30E-06	6.468E-05	-5.94E-05	-2.382E-04	-1.37E-05	6.547E-04	-2.23E-04	-7.875E-05	-4.68E-05
554.	0.0	.002373	1.04	2.05	-0.76	0.0	6.085E-05	-4.32E-05	-3.087E-04	4.00E-05	7.626E-05	-7.93E-05	-4.506E-04	5.68E-05	7.141E-04	-1.77E-04	-7.123E-05	-4.34E-05
553.	0.0	.002373	1.04	3.97	-0.76	0.0	1.579E-04	-2.58E-06	-7.445E-04	8.81E-05	1.919E-04	-6.28E-05	-1.078E-03	1.13E-04	8.874E-04	1.47E-04	-3.435E-05	1.34E-05
552.	0.0	.002373	1.05	5.82	-0.95	0.0	2.763E-04	7.24E-05	-1.315E-03	-1.12E-04	4.974E-04	1.80E-04	-1.857E-03	-1.28E-04	9.573E-04	2.56E-04	3.113E-05	7.49E-05
554.	0.0	.002373	1.05	-0.60	-0.17	0.0	2.506E-05	-3.36E-05	6.591E-05	3.08E-05	7.510E-05	-4.04E-05	1.350E-04	5.75E-05	5.152E-04	-1.46E-04	-8.777E-05	-1.85E-05
553.	0.0	.002373	1.05	-1.57	-0.17	0.0	3.444E-05	3.75E-06	1.855E-04	-8.90E-05	7.913E-05	1.22E-05	3.149E-04	-1.02E-04	6.354E-04	-9.61E-05	-8.835E-05	-2.81E-05
553.	0.0	.002373	1.06	-3.48	-0.06	0.0	2.459E-05	4.37E-05	6.156E-04	-8.43E-05	5.208E-05	6.49E-05	9.209E-04	-1.05E-04	9.616E-04	1.64E-04	-3.911E-05	1.45E-05
552.	0.0	.002373	1.06	-5.18	0.03	0.0	-3.574E-05	2.80E-05	1.123E-03	4.17E-05	-1.974E-05	6.51E-05	1.632E-03	5.96E-05	1.078E-03	2.17E-04	2.058E-05	6.76E-05
STANDARD DEVIATIONS								4.71E-05		8.75E-05		1.02E-04		1.04E-04		2.21E-04		5.31E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.902E-05		-2.487E-04		5.064E-05		-3.520E-04		-7.517E-05		-9.802E-06	
LATERAL CYCLIC PITCH DERIVATIVES							5.275E-05		-4.615E-04		1.579E-04		-5.832E-04		-7.208E-04		-1.133E-04	
RESIDUAL							8.505E-05		-1.929E-04		1.727E-04		-2.333E-04		4.538E-04		-9.440E-05	
554.	0.0	.002373	2.02	0.08	-0.32	0.0	6.129E-05	-1.44E-05	-3.282E-05	8.34E-06	1.212E-04	-2.76E-06	-6.166E-05	-1.76E-05	1.080E-03	-1.69E-04	-8.284E-05	-1.00E-05
554.	0.0	.002373	2.02	1.03	-0.56	0.0	1.299E-04	1.58E-06	-2.217E-04	5.02E-07	1.763E-04	-2.71E-05	-3.354E-04	-1.86E-05	1.096E-03	-5.35E-04	-7.183E-05	-4.35E-05
552.	0.0	.002373	2.01	2.03	-0.70	0.0	1.260E-04	-4.01E-05	-3.743E-04	5.66E-05	1.593E-04	-8.95E-05	-5.605E-04	6.22E-05	1.331E-03	-4.11E-04	-6.710E-05	-5.08E-05
552.	0.0	.002373	2.01	3.99	-0.73	0.0	1.667E-04	-5.03E-05	-7.879E-04	8.66E-05	1.984E-04	-8.97E-05	-1.158E-03	1.04E-04	1.847E-03	2.90E-04	-3.801E-05	2.50E-06
552.	0.0	.002373	2.01	5.82	-0.95	0.0	3.543E-04	6.84E-05	-1.368E-03	-1.09E-04	5.116E-04	1.40E-04	-1.938E-03	-1.13E-04	2.119E-03	3.64E-04	3.509E-05	5.42E-05
553.	0.0	.002373	2.01	-0.64	-0.16	0.0	3.253E-05	-8.36E-06	1.248E-04	2.43E-05	7.571E-05	1.19E-06	2.096E-04	4.26E-05	9.530E-04	-4.83E-05	-9.204E-05	4.61E-06
554.	0.0	.002373	2.02	-1.52	-0.12	0.0	1.772E-05	2.61E-06	3.302E-04	5.28E-06	5.452E-05	3.93E-06	4.674E-04	1.90E-05	1.158E-03	8.59E-05	-8.082E-05	1.11E-05
555.	0.0	.002373	2.01	-3.46	-0.16	0.0	2.449E-05	5.29E-05	6.367E-04	-1.03E-04	8.139E-05	5.45E-05	9.606E-04	-1.26E-04	1.609E-03	2.42E-04	-4.856E-05	6.04E-06
548.	0.0	.002373	2.00	-5.25	-0.30	0.0	-6.828E-05	-1.24E-05	1.198E-03	3.07E-05	4.246E-05	9.82E-06	1.741E-03	4.70E-05	2.035E-03	1.80E-04	3.133E-05	2.59E-05
STANDARD DEVIATIONS								4.48E-05		7.62E-05		8.12E-05		8.99E-05		3.65E-04		3.73E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.445E-05		-2.273E-04		1.656E-05		-3.270E-04		-1.185E-04		-1.525E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.101E-04		-1.355E-04		-2.403E-04		-1.541E-04		-1.872E-03		-2.230E-04	
RESIDUAL							3.878E-05		-6.825E-05		4.623E-05		-6.824E-05		6.618E-04		-1.426E-04	
550.	0.0	.002373	4.00	0.13	-0.33	0.0	1.039E-04	1.44E-05	-2.822E-05	-2.10E-05	1.780E-04	2.27E-05	-4.601E-05	-5.56E-05	2.940E-03	-2.78E-04	-1.867E-05	-4.45E-05
545.	0.0	.002373	4.01	1.08	-0.54	0.0	2.171E-04	2.31E-05	-3.226E-04	-3.25E-05	3.124E-04	1.89E-05	-4.736E-04	-7.38E-05	2.584E-03	-3.90E-04	-1.224E-05	-6.26E-05
550.	0.0	.002373	4.01	2.07	-0.71	0.0	2.665E-04	-1.76E-05	-6.167E-04	-4.02E-05	3.929E-04	-2.27E-05	-8.728E-04	-6.22E-05	3.037E-03	-4.42E-04	5.756E-06	-5.98E-05
550.	0.0	.002373	4.00	3.97	-0.86	0.0	4.000E-04	1.09E-05	-1.054E-03	3.34E-05	5.972E-04	2.66E-05	-1.478E-03	5.16E-05	3.396E-03	-8.91E-05	5.539E-05	-3.38E-06
550.	0.0	.002373	4.01	5.89	-0.87	0.0	4.353E-04	-1.09E-05	-1.553E-03	2.22E-05	6.468E-04	-2.33E-05	-2.151E-03	5.53E-05	4.195E-03	8.47E-04	1.376E-04	1.12E-04
552.	0.0	.002373	4.00	-0.60	-0.20	0.0	1.608E-05	-6.22E-06	1.758E-04	-2.92E-05	5.820E-05	-6.18E-06	2.774E-04	-3.65E-05	2.940E-03	-1.99E-04	-4.928E-06	-1.93E-05
552.	0.0	.002373	4.00	-1.58	-0.16	0.0	-1.220E-05	5.74E-06	4.856E-04	2.38E-05	8.273E-06	7.70E-06	7.099E-04	3.75E-05	3.035E-03	-1.42E-04	4.468E-06	-2.10E-05
552.	0.0	.002373	4.00	-3.39	-0.13	0.0	-1.153E-04	-3.65E-05	9.830E-04	5.80E-05	-1.347E-04	-3.33E-05	1.404E-03	8.81E-05	3.275E-03	-1.07E-05	6.318E-05	1.06E-05
552.	0.0	.002373	4.00	-5.18	-0.03	0.0	-1.480E-04	1.70E-05	1.384E-03	-1.45E-05	-2.229E-04	9.58E-06	1.975E-03	-4.28E-06	4.021E-03	7.04E-04	1.539E-04	8.82E-05
STANDARD DEVIATIONS								2.23E-05		4.03E-05		2.56E-05		6.91E-05		5.33E-04		7.15E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.737E-05		-2.527E-04		4.902E-05		-3.497E-04		-7.816E-05		-1.838E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-3.681E-04		2.104E-04		-4.300E-04		3.753E-04		-1.070E-03		-1.953E-04	
RESIDUAL							-3.459E-05		9.573E-05		8.136E-06		1.795E-04		2.679E-03		-3.552E-05	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
552.	0.0	.002373	6.04	0.17	-0.39	0.0	1.227E-04	8.51E-06	-1.207E-04	-6.85E-05	2.409E-04	3.92E-05	-1.671E-04	-1.28E-04	5.397E-03	-1.97E-04	1.609E-04	-6.42E-05
551.	0.0	.002373	6.03	1.10	-0.60	0.0	2.659E-04	-1.23E-05	-4.346E-04	-3.72E-05	4.112E-04	-2.32E-05	-6.106E-04	-7.02E-05	5.392E-03	-2.87E-04	1.643E-04	-7.62E-05
551.	0.0	.002373	6.04	2.08	-0.75	0.0	3.829E-04	-3.44E-05	-7.456E-04	-5.80E-06	5.845E-04	-5.31E-05	-1.048E-03	-1.17E-05	5.500E-03	-2.29E-04	1.906E-04	-5.62E-05
551.	0.0	.002373	6.04	4.03	-0.79	0.0	6.171E-04	5.10E-05	-1.360E-03	-8.10E-07	9.254E-04	4.34E-05	-1.886E-03	2.16E-06	5.716E-03	3.01E-05	2.327E-04	1.09E-05
550.	0.0	.002373	6.03	5.79	-0.92	0.0	7.388E-04	-5.86E-06	-1.857E-03	4.39E-05	1.170E-03	7.27E-06	-2.624E-03	8.23E-05	6.130E-03	4.28E-04	3.248E-04	1.11E-04
551.	0.0	.002373	6.04	-1.56	-0.18	0.0	-1.401E-04	-3.53E-05	5.490E-04	9.48E-06	-2.014E-04	-8.28E-05	8.224E-04	2.07E-05	5.388E-03	-1.52E-04	1.946E-04	-2.81E-05
550.	0.0	.002373	6.03	-3.45	-0.16	0.0	-2.009E-04	3.58E-05	1.210E-03	7.65E-05	-2.636E-04	8.18E-05	1.746E-03	1.25E-04	5.663E-03	7.16E-05	2.589E-04	9.34E-06
550.	0.0	.002373	6.05	-5.23	-0.05	0.0	-4.075E-04	4.72E-07	1.696E-03	-1.77E-05	-6.252E-04	-1.25E-05	2.414E-03	-1.96E-05	5.527E-03	3.37E-04	3.551E-04	9.33E-05
STANDARD DEVIATIONS								3.73E-05		5.35E-05		6.41E-05		9.46E-05		3.16E-04		8.39E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							6.637E-05		-3.106E-04		1.130E-04		-4.272E-04		-3.364E-05		-1.582E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-4.911E-04		2.680E-04		-6.121E-04		4.981E-04		-5.562E-04		-1.455E-04	
RESIDUAL							-8.794E-05		1.039E-04		-5.531E-05		2.265E-04		5.384E-03		1.711E-04	
550.	0.0	.002373	8.01	0.14	-0.36	0.0	2.810E-04	1.14E-04	1.135E-05	1.32E-05	4.154E-04	1.51E-04	-2.550E-05	-3.00E-05	8.151E-03	-2.98E-04	4.104E-04	-1.03E-04
550.	0.0	.002373	8.00	1.14	-0.55	0.0	3.431E-04	1.62E-05	-4.673E-04	-3.43E-05	4.662E-04	3.27E-05	-7.156E-04	-6.22E-05	8.322E-03	-6.37E-05	4.218E-04	-6.53E-05
552.	0.0	.002373	8.00	2.14	-0.58	0.0	4.980E-04	3.26E-05	-7.789E-04	3.59E-05	6.812E-04	6.57E-05	-1.167E-03	4.45E-05	8.158E-03	-2.05E-04	4.193E-04	-5.41E-05
552.	0.0	.002373	8.01	4.07	-0.45	0.0	7.867E-04	7.77E-05	-1.524E-03	-2.90E-05	1.061E-03	8.06E-05	-2.231E-03	-5.57E-05	8.370E-03	5.77E-06	4.736E-04	1.28E-05
551.	0.0	.002373	8.01	5.99	-0.42	0.0	8.360E-04	-1.29E-04	-2.196E-03	8.50E-06	1.142E-03	-1.96E-04	-3.148E-03	4.89E-05	8.673E-03	3.38E-04	5.662E-04	1.25E-04
552.	0.0	.002373	8.01	-1.57	-0.33	0.0	-8.134E-05	-1.34E-05	6.453E-04	-2.66E-06	-3.203E-05	1.79E-05	9.591E-04	8.68E-06	8.388E-03	-9.65E-05	4.841E-04	-5.11E-05
552.	0.0	.002373	8.01	-3.36	-0.46	0.0	-3.885E-04	-9.67E-05	1.310E-03	3.56E-05	-4.526E-04	-6.36E-05	1.923E-03	8.86E-05	8.478E-03	-5.57E-06	5.624E-04	1.65E-05
552.	0.0	.002373	8.01	-5.23	-0.46	0.0	-5.453E-04	-1.15E-06	1.945E-03	-2.72E-05	-8.224E-04	-8.83E-05	2.803E-03	-4.29E-05	8.837E-03	3.22E-04	6.863E-04	1.19E-04
STANDARD DEVIATIONS								9.63E-05		3.34E-05		1.31E-04		6.64E-05		2.69E-04		1.01E-04
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.348E-04		-3.731E-04		1.843E-04		-5.402E-04		-1.679E-05		-1.150E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.289E-04		3.044E-04		7.873E-05		6.154E-04		2.373E-04		7.622E-05	
RESIDUAL							1.019E-04		1.608E-04		2.663E-04		3.027E-04		8.536E-03		5.423E-04	
550.	0.0	.002373	10.02	0.16	-0.41	0.0	2.791E-04	3.72E-05	-2.968E-05	1.07E-05	4.246E-04	7.53E-05	-8.517E-05	-3.90E-05	1.140E-02	-1.20E-04	8.148E-04	-7.29E-05
549.	0.0	.002373	10.02	1.16	-0.57	0.0	3.545E-04	-3.42E-05	-4.793E-04	-1.33E-05	4.675E-04	-4.81E-05	-7.479E-04	-3.13E-05	1.150E-02	-4.89E-05	8.404E-04	-5.11E-05
545.	0.0	.002373	10.03	2.19	-0.58	0.0	6.057E-04	6.42E-05	-8.531E-04	6.30E-06	8.212E-04	1.01E-04	-1.295E-03	-2.63E-06	1.145E-02	-9.21E-05	8.312E-04	-4.71E-05
552.	0.0	.002373	10.02	6.09	-0.45	0.0	1.079E-03	-4.58E-05	-2.286E-03	7.42E-06	1.456E-03	-8.46E-05	-3.283E-03	4.44E-05	1.163E-02	1.69E-04	9.151E-04	1.10E-04
552.	0.0	.002373	10.01	-1.52	-0.33	0.0	5.525E-06	1.34E-05	6.161E-04	-2.58E-06	4.237E-05	1.67E-05	9.317E-04	-3.45E-06	1.146E-02	-5.64E-05	8.609E-04	-4.29E-05
551.	0.0	.002373	10.01	-3.50	-0.47	0.0	-2.995E-04	5.44E-06	1.274E-03	-5.26E-05	-3.837E-04	2.24E-05	1.885E-03	-3.25E-05	1.155E-02	-2.62E-05	9.413E-04	-7.48E-06
551.	0.0	.002373	10.02	-5.30	-0.49	0.0	-6.128E-04	-4.00E-05	2.043E-03	4.41E-05	-8.581E-04	-8.32E-05	2.948E-03	6.44E-05	1.177E-02	1.75E-04	1.089E-03	1.11E-04
STANDARD DEVIATIONS								5.14E-05		3.57E-05		9.10E-05		4.93E-05		1.49E-04		9.57E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.490E-04		-3.781E-04		2.025E-04		-5.485E-04		-1.069E-05		-1.477E-05	
LATERAL CYCLIC PITCH DERIVATIVES							1.330E-05		2.955E-04		2.223E-04		7.564E-04		-2.887E-04		-1.144E-04	
RESIDUAL							2.232E-04		1.408E-04		4.068E-04		3.498E-04		1.140E-02		8.436E-04	
550.	0.0	.002373	12.03	0.26	-0.43	0.0	2.438E-04	-1.21E-05	-3.772E-05	1.69E-05	3.886E-04	1.61E-05	-1.048E-04	-3.29E-05	1.497E-02	1.58E-04	1.336E-03	-5.28E-05
549.	0.0	.002373	12.04	2.23	-0.61	0.0	6.156E-04	5.61E-06	-9.328E-04	-8.37E-05	8.953E-04	1.22E-05	-1.356E-03	-1.40E-04	1.467E-02	-7.16E-05	1.282E-03	-1.03E-04
545.	0.0	.002373	12.05	4.27	-0.46	0.0	8.502E-04	-2.14E-05	-1.653E-03	-3.28E-05	1.201E-03	-3.34E-05	-2.372E-03	-6.28E-05	1.484E-02	1.12E-04	1.302E-03	-1.97E-05
552.	0.0	.002373	12.04	6.25	-0.44	0.0	1.194E-03	3.09E-05	-2.335E-03	5.05E-05	1.661E-03	2.15E-05	-3.266E-03	1.15E-04	1.458E-02	-1.22E-04	1.400E-03	1.17E-04
554.	0.0	.002373	12.04	-1.61	-0.39	0.0	-4.924E-05	-1.13E-05	6.813E-04	1.66E-06	-5.543E-05	-1.49E-05	1.008E-03	2.96E-05	1.478E-02	-7.73E-05	1.382E-03	-3.41E-05
552.	0.0	.002373	12.04	-3.56	-0.65	0.0	-2.967E-04	-4.47E-05	1.539E-03	1.41E-04	-3.453E-04	-2.98E-05	2.209E-03	2.17E-04	1.498E-02	1.45E-04	1.521E-03	2.42E-05
552.	0.0	.002373	12.04	-5.44	-0.59	0.0	-5.016E-04	5.29E-05	2.047E-03	-9.41E-05	-7.144E-04	2.82E-05	2.930E-03	-1.26E-04	1.474E-02	-1.46E-04	1.589E-03	6.84E-05
STANDARD DEVIATIONS								4.04E-05		9.97E-05		3.12E-05		1.60E-04		1.63E-04		9.23E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.512E-04		-3.892E-04		2.109E-04		-5.500E-04		-1.856E-05		-1.792E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-3.147E-04		1.550E-04		-5.315E-04		2.711E-04		2.155E-04		-1.815E-04	
RESIDUAL							8.159E-05		1.143E-04		8.966E-05		1.906E-04		1.491E-02		1.316E-03	
850.	0.0	.002420	1.01	0.71	-0.41	0.0	5.210E-05	5.45E-08	-7.689E-05	4.69E-06	1.269E-04	-3.68E-06	-2.422E-04	2.55E-06	2.630E-04	1.80E-04	1.272E-04	1.52E-05
852.	0.0	.002420	2.00	0.74	-0.44	0.0	9.970E-05	6.58E-07	-1.067E-04	-5.79E-06	2.317E-04	1.38E-05	-2.759E-04	-9.05E-06	5.714E-04	-2.25E-04	1.415E-04	-2.09E-05
850.	0.0	.002420	3.01	0.81	-0.48	0.0	1.525E-04	3.01E-07	-1.320E-04	1.51E-06	3.231E-04	2.08E-06	-3.088E-04	-1.33E-06	1.171E-03	5.78E-05	1.691E-04	4.28E-06
849.	0.0	.002420	3.99	0.83	-0.52	0.0	1.795E-04	4.02E-07	-1.373E-04	-3.32E-07	3.738E-04	5.42E-06	-3.212E-04	-3.55E-06	1.959E-03	-1.53E-05	2.219E-04	-2.25E-06
845.	0.0	.002420	6.01	0.82	-0.55	0.0	2.735E-04	3.15E-07	-1.614E-04	1.49E-06	5.404E-04	2.66E-06	-3.412E-04	-1.72E-06	4.006E-03	5.57E-05	3.980E-04	4.11E-06
STANDARD DEVIATIONS								8.88E-07		7.76E-06		1.57E-05		1.03E-05		2.99E-04		2.66E-05
COLLECTIVE PITCH DERIVATIVES							6.878E-05		-2.766E-05		1.270E-04		-1.866E-05		9.308E-04		8.976E-05	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.633E-04		-4.455E-04		7.915E-04		-4.921E-04		-9.378E-03		-1.008E-03	
LATERAL CYCLIC PITCH DERIVATIVES							1.187E-03		-7.820E-04		2.300E-03		-4.005E-04		-2.151E-03		3.614E-04	
RESIDUAL							2.167E-04		-6.163E-05		3.939E-04		-4.292E-05		4.905E-03		8.860E-04	

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
851.	0.06	.002334	0.96	0.07	0.34	0.0	-2.255E-06	2.39E-05	-1.414E-05	3.75E-06	-1.338E-04	4.85E-05	2.897E-05	2.09E-05	1.002E-03	-3.83E-05	3.706E-04	-9.52E-06
850.	0.06	.002336	0.96	1.00	0.30	0.0	9.239E-05	2.74E-05	-1.650E-04	-5.59E-06	-6.961E-05	-2.83E-05	-3.986E-04	-1.08E-04	1.008E-03	-8.17E-06	3.444E-04	-6.17E-06
845.	0.06	.002336	0.96	1.85	0.33	0.0	1.552E-04	1.71E-05	-2.911E-04	4.03E-06	7.479E-05	-6.05E-06	-6.248E-04	-5.23E-05	9.508E-04	-1.49E-05	3.342E-04	1.06E-05
851.	0.06	.002336	0.96	2.71	0.23	0.0	2.056E-04	-2.82E-05	-4.257E-04	-8.17E-06	2.340E-04	1.36E-05	-8.806E-04	-3.74E-05	9.863E-04	1.43E-05	3.223E-04	2.64E-05
851.	0.06	.002337	0.96	0.12	0.31	0.0	-1.449E-06	1.35E-05	-1.773E-05	5.19E-06	-1.111E-04	5.92E-05	2.483E-05	2.56E-05	1.052E-03	1.56E-05	3.658E-04	-1.25E-05
850.	0.06	.002335	0.96	-0.26	0.45	0.0	-1.184E-04	-4.40E-05	2.710E-05	2.65E-06	-3.285E-04	-8.40E-05	2.381E-04	1.35E-04	1.102E-03	3.63E-05	3.864E-04	-4.48E-06
849.	0.06	.002339	0.96	-1.07	0.83	0.0	-2.472E-04	-3.39E-05	1.151E-04	-6.82E-07	-4.575E-04	-4.74E-05	4.009E-04	8.34E-05	1.144E-03	-5.81E-06	4.027E-04	-1.45E-05
849.	0.06	.002339	0.95	-1.84	1.05	0.0	-3.106E-04	5.14E-06	2.166E-04	5.29E-07	-5.257E-04	2.35E-05	5.739E-04	3.35E-05	1.181E-03	-2.11E-05	4.285E-04	-1.34E-05
850.	0.06	.002339	0.96	-2.69	1.20	0.0	-3.966E-04	2.72E-05	3.411E-04	6.17E-06	-6.641E-04	2.93E-05	7.969E-04	-1.66E-06	1.269E-03	2.31E-05	4.628E-04	-6.44E-06
846.	0.06	.002337	0.96	-4.68	1.17	0.0	-6.122E-04	-1.20E-05	6.428E-04	-7.88E-06	-9.925E-04	-8.75E-06	1.354E-03	-1.03E-04	1.271E-03	-5.05E-06	5.627E-04	3.02E-05
STANDARD DEVIATIONS								3.08E-05		6.13E-06		5.03E-05		8.75E-05		2.59E-05		1.87E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							9.085E-05		-1.570E-04		1.472E-04		-3.282E-04		-1.774E-05		-3.176E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.718E-04		-5.314E-05		-1.225E-04		-1.329E-04		1.831E-04		1.874E-06	
RESIDUAL							2.670E-05		2.523E-05		-1.507E-04		7.686E-05		9.783E-04		3.817E-04	
850.	0.05	.002350	3.89	0.24	1.22	0.0	7.144E-06	-1.06E-05	-1.562E-05	1.13E-05	-1.524E-04	-1.51E-06	-5.065E-05	2.37E-05	3.969E-03	-2.83E-04	4.278E-04	8.65E-06
850.	0.05	.002350	3.89	0.62	1.17	0.0	5.899E-05	-8.87E-06	-9.641E-05	-1.60E-05	-1.025E-04	-3.72E-05	-2.251E-04	-2.15E-05	4.064E-03	-1.48E-04	4.092E-04	8.07E-06
851.	0.05	.002350	3.89	1.28	1.21	0.0	1.685E-04	2.56E-05	-1.980E-04	2.26E-05	1.395E-04	5.89E-05	-5.159E-04	7.45E-06	4.618E-03	4.04E-04	3.781E-04	-2.56E-05
845.	0.05	.002350	3.89	1.97	1.20	0.0	2.441E-04	1.84E-05	-3.508E-04	1.58E-06	2.894E-04	5.44E-05	-8.663E-04	-3.81E-05	4.505E-03	3.17E-04	3.702E-04	-2.50E-05
848.	0.05	.002350	3.89	2.71	1.25	0.0	2.955E-04	-1.33E-05	-5.165E-04	-5.54E-06	3.755E-04	-2.22E-05	-1.211E-03	-2.21E-05	4.075E-03	-1.23E-04	4.043E-04	4.67E-06
847.	0.05	.002350	3.89	3.53	1.21	0.0	3.840E-04	-2.66E-05	-6.652E-04	-1.64E-05	5.762E-04	-3.80E-06	-1.520E-03	-7.00E-06	4.053E-03	-9.27E-05	4.207E-04	4.32E-05
849.	0.05	.002350	3.87	-0.44	1.28	0.0	-6.309E-05	5.24E-06	8.408E-05	4.45E-06	-3.587E-04	-5.66E-05	2.142E-04	3.55E-05	4.220E-03	-8.67E-05	4.437E-04	1.02E-06
850.	0.05	.002350	3.87	-1.95	1.55	0.0	-2.444E-04	2.99E-05	2.691E-04	2.91E-06	-6.485E-04	-4.62E-06	7.180E-04	7.74E-05	4.476E-03	-3.18E-05	4.914E-04	-4.12E-05
851.	0.05	.002350	3.89	-3.65	1.79	0.0	-4.844E-04	1.66E-05	5.217E-04	2.01E-05	-1.065E-03	-3.59E-05	1.236E-03	2.36E-05	4.586E-03	-1.12E-04	5.991E-04	-1.78E-05
849.	0.05	.002350	3.88	-5.20	1.75	0.0	-7.171E-04	-3.65E-05	7.853E-04	-2.49E-05	-1.322E-03	4.82E-05	1.842E-03	-7.85E-05	4.882E-03	1.60E-04	6.694E-04	4.52E-05
STANDARD DEVIATIONS								2.56E-05		1.79E-05		4.65E-05		4.94E-05		2.50E-04		3.24E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.191E-04		-1.902E-04		2.221E-04		-4.398E-04		-3.051E-05		-1.175E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-9.618E-05		-3.701E-04		-2.346E-05		-7.435E-04		5.697E-04		2.654E-04	
RESIDUAL							1.065E-04		4.691E-04		-1.751E-04		9.360E-04		3.566E-03		9.871E-05	
845.	0.06	.002339	0.96	0.08	0.32	0.0	-1.229E-05	-4.08E-06	-2.374E-06	-1.62E-06	-1.174E-04	-4.48E-05	4.711E-05	-1.84E-05	1.050E-03	3.79E-05	3.690E-04	-3.38E-06
850.	0.06	.002339	0.97	0.24	0.82	0.0	-1.985E-04	-1.39E-05	-5.090E-05	-1.53E-05	-5.079E-04	-3.30E-05	-3.461E-05	-8.33E-06	1.214E-03	-6.20E-05	3.649E-04	-5.40E-06
845.	0.06	.002339	0.97	0.35	1.64	0.0	-3.922E-04	-1.42E-05	-1.571E-04	-1.99E-06	-8.735E-04	-3.52E-05	-1.371E-04	2.21E-05	1.530E-03	-3.23E-06	3.664E-04	3.14E-06
848.	0.06	.002339	0.96	0.51	2.51	0.0	-6.032E-04	6.52E-06	-2.338E-04	1.79E-05	-1.262E-03	4.68E-05	-3.068E-04	-2.43E-06	1.883E-03	2.80E-05	3.614E-04	4.48E-06
850.	0.06	.002340	0.97	0.59	3.47	0.0	-8.022E-04	-5.18E-06	-3.270E-04	7.73E-08	-1.620E-03	-8.07E-06	-4.391E-04	1.36E-05	2.108E-03	2.32E-05	3.530E-04	5.75E-06
851.	0.06	.002339	0.97	-0.02	0.02	0.0	1.370E-04	3.60E-05	4.489E-05	-7.84E-07	2.412E-04	6.15E-05	9.433E-05	-2.66E-05	8.384E-04	-9.85E-06	3.660E-04	-7.51E-06
850.	0.06	.002339	0.96	-0.14	-0.25	0.0	2.439E-04	2.36E-05	6.951E-05	-7.08E-06	5.270E-04	5.76E-05	1.815E-04	6.81E-06	6.169E-04	-4.68E-05	3.661E-04	-7.74E-06
852.	0.06	.002339	0.96	-0.34	-0.81	0.0	4.131E-04	-1.52E-05	1.834E-04	-3.83E-06	9.172E-04	-5.20E-05	2.643E-04	-1.48E-05	3.234E-04	-1.72E-05	3.731E-04	-2.41E-06
850.	0.06	.002340	0.97	-0.55	-2.65	0.0	8.308E-04	-5.58E-06	3.670E-04	1.27E-05	1.713E-03	7.11E-06	6.007E-04	2.81E-05	-1.405E-04	4.99E-05	4.052E-04	1.31E-05
STANDARD DEVIATIONS								2.16E-05		1.14E-05		5.23E-05		2.18E-05		4.41E-05		8.13E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-6.740E-04		-3.033E-04		-2.086E-03		-1.215E-04		1.225E-03		2.487E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.418E-04		-5.469E-05		-1.529E-04		-1.448E-04		1.431E-04		-1.196E-05	
RESIDUAL							9.132E-05		4.115E-05		1.448E-04		1.212E-04		8.679E-04		3.742E-04	
850.	0.05	.002350	3.89	0.22	1.20	0.0	1.123E-05	-1.83E-06	-3.138E-06	5.46E-06	-1.673E-04	-1.13E-06	-2.496E-05	2.55E-05	4.199E-03	1.16E-04	4.214E-04	7.47E-07
850.	0.05	.002350	3.89	0.31	2.99	0.0	-4.052E-04	-4.70E-06	-1.966E-04	1.97E-05	-1.004E-03	-3.91E-05	-4.145E-04	3.13E-05	4.666E-03	8.66E-05	4.293E-04	1.48E-05
853.	0.05	.002350	3.89	0.55	4.59	0.0	-7.770E-04	1.53E-05	-4.407E-04	-1.89E-05	-1.720E-03	6.32E-05	-8.730E-04	-2.74E-05	5.273E-03	1.89E-04	4.043E-04	-1.12E-05
849.	0.05	.002350	3.88	0.23	2.21	0.0	-2.360E-04	-2.10E-05	-1.124E-04	1.06E-05	-6.609E-04	-6.91E-05	-2.553E-04	7.12E-06	3.786E-03	-5.63E-04	4.176E-04	2.00E-06
850.	0.05	.002350	3.88	-0.00	0.30	0.0	2.371E-04	-5.08E-06	1.014E-04	-1.37E-05	3.277E-04	-2.65E-05	1.684E-04	-3.26E-05	3.781E-03	1.71E-05	4.205E-04	4.07E-06
850.	0.05	.002350	3.88	-0.04	0.04	0.0	3.453E-04	3.65E-05	1.402E-04	-7.22E-06	5.653E-04	8.32E-05	2.435E-04	-2.01E-05	3.676E-03	-9.23E-06	4.112E-04	-5.35E-06
851.	0.05	.002350	3.89	-0.43	-1.00	0.0	5.936E-04	-5.32E-06	3.058E-04	1.15E-06	1.173E-03	8.46E-07	6.045E-04	1.04E-05	3.364E-03	1.00E-04	4.037E-04	-3.06E-06
850.	0.05	.002350	3.89	0.27	1.19	0.0	-1.845E-06	-5.92E-06	-5.719E-06	2.87E-06	-2.059E-04	-1.14E-05	-5.699E-05	5.51E-06	4.163E-03	6.37E-05	4.205E-04	-2.04E-06
STANDARD DEVIATIONS								2.12E-05		1.51E-05		6.01E-05		2.84E-05		2.78E-04		9.03E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.412E-04		-1.017E-04		-6.583E-04		-2.925E-04		3.862E-04		3.988E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.239E-04		-1.120E-04		-4.131E-04		-2.061E-04		2.578E-04		-5.411E-06	
RESIDUAL							3.137E-04		1.488E-04		4.769E-04		2.624E-04		3.687E-03		4.183E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
851.	0.10	.002405	0.88	-0.25	0.44	0.0	2.604E-05	-1.55E-05	-3.129E-06	-1.90E-05	1.001E-05	-4.45E-05	5.883E-05	4.80E-06	1.192E-03	7.10E-05	3.387E-04	-3.49E-06
852.	0.10	.002405	0.88	0.22	0.20	0.0	1.814E-04	-6.57E-06	-2.253E-05	1.73E-07	2.614E-04	-6.26E-05	-2.798E-05	2.59E-05	1.165E-03	4.15E-05	3.181E-04	-5.21E-06
856.	0.10	.002405	0.88	0.80	0.06	0.0	3.129E-04	6.86E-06	-1.018E-04	-1.32E-05	5.086E-04	-1.88E-05	-2.166E-04	-9.81E-06	1.067E-03	-8.04E-05	2.965E-04	-8.08E-06
857.	0.10	.002404	0.88	0.79	0.06	0.0	3.058E-04	1.12E-06	-8.702E-05	-6.05E-07	5.031E-04	-2.24E-05	-2.003E-04	2.41E-06	1.164E-03	1.69E-05	2.974E-04	-7.55E-06
852.	0.10	.002405	0.88	1.70	-0.04	0.0	4.470E-04	1.81E-05	-1.942E-04	8.81E-06	7.688E-04	4.06E-05	-4.729E-04	-3.00E-05	1.168E-03	-2.05E-05	2.840E-04	4.00E-06
852.	0.10	.002405	0.87	2.63	-0.17	0.0	5.666E-04	1.19E-06	-3.080E-04	1.22E-05	1.028E-03	7.35E-05	-7.042E-04	-1.60E-05	1.229E-03	-1.47E-07	2.544E-04	6.61E-07
850.	0.10	.002404	0.87	3.56	-0.23	0.0	6.846E-04	5.21E-06	-4.334E-04	1.07E-05	1.227E-03	9.14E-05	-9.339E-04	4.11E-06	1.255E-03	-1.87E-05	2.360E-04	6.85E-06
850.	0.10	.002402	0.87	4.35	-0.39	0.0	8.171E-04	-1.44E-06	-5.414E-04	-3.92E-06	1.350E-03	-2.45E-05	-1.127E-03	1.60E-05	1.324E-03	1.53E-05	2.225E-04	1.74E-05
845.	0.10	.002401	0.87	-0.91	0.96	0.0	-2.647E-04	-3.11E-05	5.399E-05	3.71E-06	-6.370E-04	-1.58E-04	2.073E-04	6.04E-06	1.093E-03	-3.15E-05	3.551E-04	-1.92E-05
851.	0.10	.002400	0.87	-2.01	1.34	0.0	-4.836E-04	1.12E-05	1.457E-04	-1.72E-05	-9.723E-04	-2.20E-05	4.743E-04	-2.79E-07	1.107E-03	1.24E-05	3.945E-04	-1.83E-05
845.	0.10	.002399	0.87	-3.91	1.59	0.0	-7.479E-04	2.48E-05	3.969E-04	-6.23E-06	-1.326E-03	8.50E-05	9.437E-04	-3.28E-05	1.042E-03	3.14E-05	4.745E-04	8.06E-06
850.	0.10	.002401	0.87	-4.77	1.71	0.0	-9.086E-04	-7.55E-06	5.353E-04	2.45E-05	-1.562E-03	6.28E-05	1.226E-03	2.36E-05	9.323E-04	-4.12E-05	5.156E-04	2.48E-05
STANDARD DEVIATIONS								1.31E-05		1.43E-05		8.13E-05		2.15E-05		4.53E-05		1.46E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							9.074E-05		-1.410E-04		1.290E-04		-2.725E-04		5.398E-05		-2.408E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-4.240E-04		-1.135E-04		-8.664E-04		-6.694E-05		7.692E-05		3.139E-05	
RESIDUAL							2.567E-04		3.136E-05		4.721E-04		1.625E-05		1.100E-03		3.222E-04	
851.	0.10	.002398	3.86	-0.38	1.62	0.0	1.364E-05	4.06E-05	1.732E-05	-2.18E-07	-2.324E-04	9.13E-05	7.839E-05	-1.71E-06	5.617E-03	2.64E-05	3.948E-04	-3.14E-06
851.	0.10	.002398	3.86	0.45	1.41	0.0	1.539E-04	2.14E-05	-8.267E-05	-4.02E-06	3.160E-05	7.54E-05	-2.168E-04	-7.38E-05	5.600E-03	-3.41E-05	3.660E-04	3.33E-07
854.	0.09	.002398	3.86	1.66	1.21	0.0	3.277E-04	-4.53E-06	-2.352E-04	1.72E-05	3.946E-04	5.16E-05	-6.113E-04	-8.69E-05	5.669E-03	-7.08E-05	3.236E-04	-5.22E-06
849.	0.10	.002396	3.86	3.30	1.07	0.0	5.882E-04	1.92E-05	-5.054E-04	2.14E-05	8.355E-04	-1.34E-05	-1.140E-03	-3.03E-05	5.868E-03	-6.71E-05	2.659E-04	-2.35E-05
847.	0.10	.002396	3.86	5.32	0.65	0.0	9.071E-04	-2.18E-05	-8.152E-04	-2.87E-05	1.483E-03	-2.88E-05	-1.644E-03	5.80E-05	6.157E-03	7.97E-05	2.389E-04	1.93E-05
849.	0.10	.002395	3.86	-1.03	1.78	0.0	-1.822E-04	-3.36E-05	1.336E-04	3.66E-05	-6.813E-04	-1.40E-04	4.076E-04	1.46E-04	5.602E-03	5.00E-05	4.332E-04	1.10E-05
848.	0.10	.002396	3.86	-2.20	2.03	0.0	-3.829E-04	-2.31E-05	2.150E-04	-3.04E-05	-1.008E-03	-8.24E-05	6.422E-04	4.50E-05	5.497E-03	2.18E-05	4.630E-04	-4.95E-07
847.	0.10	.002395	3.86	-4.09	2.65	0.0	-7.743E-04	-1.36E-05	3.845E-04	-4.12E-05	-1.571E-03	1.53E-05	9.659E-04	-7.22E-05	5.447E-03	1.79E-05	5.476E-04	-1.01E-06
847.	0.10	.002394	3.86	-4.82	2.96	0.0	-9.200E-04	1.55E-05	5.067E-04	2.94E-05	-1.825E-03	3.13E-05	1.194E-03	1.61E-05	5.413E-03	-2.21E-05	5.900E-04	2.50E-06
STANDARD DEVIATIONS								2.90E-05		3.27E-05		8.69E-05		6.76E-05		5.59E-05		1.35E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.201E-04		-1.912E-04		2.925E-04		-3.972E-04		1.506E-04		-1.660E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.795E-04		-2.910E-04		-1.732E-04		-4.982E-04		3.835E-04		8.638E-05	
RESIDUAL							4.717E-04		4.166E-04		6.819E-05		7.367E-04		5.027E-03		2.517E-04	
850.	0.10	.002396	7.82	-0.59	2.87	0.0	5.932E-05	-3.42E-05	8.434E-06	5.04E-05	-2.128E-04	-1.83E-05	5.549E-05	1.60E-04	1.114E-02	-4.56E-04	6.220E-04	-1.12E-05
852.	0.09	.002393	7.82	0.42	2.66	0.0	2.881E-04	4.22E-06	-1.334E-04	4.43E-05	1.847E-04	3.99E-05	-2.825E-04	1.09E-04	1.204E-02	3.39E-04	5.797E-04	-2.71E-06
854.	0.10	.002394	7.82	0.69	2.58	0.0	3.345E-04	-2.26E-06	-2.401E-04	-2.93E-05	1.804E-04	-5.33E-05	-5.957E-04	-1.45E-04	1.110E-02	-6.27E-04	5.381E-04	-2.68E-05
855.	0.10	.002391	7.81	4.28	2.06	0.0	1.019E-03	2.02E-05	-7.487E-04	-3.47E-05	1.479E-03	3.13E-05	-1.656E-03	-7.30E-05	1.239E-02	3.04E-04	4.267E-04	1.69E-05
845.	0.10	.002391	7.81	-1.51	2.98	0.0	-1.122E-04	-3.76E-05	1.200E-04	3.16E-05	-5.824E-04	-7.68E-05	2.983E-04	1.05E-04	1.147E-02	-2.92E-05	6.756E-04	4.74E-06
847.	0.05	.002391	7.80	-2.61	3.11	0.0	-2.437E-04	3.24E-05	2.165E-04	-2.74E-05	-8.287E-04	5.09E-05	5.110E-04	-4.64E-05	1.170E-02	3.13E-04	7.274E-04	1.25E-05
848.	0.10	.002391	7.81	-4.54	3.60	0.0	-6.319E-04	1.71E-05	4.595E-04	-3.73E-05	-1.493E-03	3.39E-05	9.400E-04	-1.14E-04	1.135E-02	1.66E-04	8.335E-04	8.12E-06
854.	0.10	.002392	7.80	-6.31	4.31	0.0	-1.014E-03	1.63E-07	7.039E-04	2.03E-06	-2.124E-03	-7.12E-06	1.366E-03	3.11E-06	1.093E-02	-5.17E-05	9.590E-04	-3.30E-06
STANDARD DEVIATIONS								2.95E-05		4.41E-05		5.56E-05		1.34E-04		4.33E-04		1.67E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.716E-04		-1.533E-04		3.400E-04		-3.933E-04		9.125E-05		-2.368E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-8.671E-05		-5.322E-05		1.764E-05		-5.439E-04		-6.294E-05		1.333E-04	
RESIDUAL							4.427E-04		1.352E-04		-4.542E-05		1.223E-03		1.183E-02		2.371E-04	
849.	0.10	.002368	0.87	0.05	0.38	0.0	6.116E-06	-2.48E-05	-5.569E-06	-2.15E-05	-1.534E-04	-9.30E-05	-2.144E-05	-5.81E-05	1.338E-03	3.09E-05	2.995E-04	-6.32E-06
849.	0.10	.002365	0.87	0.15	1.30	0.0	-2.527E-04	-3.66E-05	-1.480E-04	7.50E-07	-6.525E-04	-9.36E-05	-2.798E-04	-4.18E-05	1.495E-03	-1.68E-05	2.915E-04	1.85E-06
848.	0.10	.002366	0.86	0.14	2.24	0.0	-4.960E-04	-2.44E-05	-2.958E-04	-1.21E-06	-1.119E-03	-7.04E-05	-5.064E-04	-3.45E-05	1.768E-03	6.11E-05	2.923E-04	8.69E-06
849.	0.10	.002367	0.86	0.11	4.23	0.0	-1.014E-03	-2.37E-06	-5.965E-04	4.96E-06	-2.077E-03	3.78E-06	-9.894E-04	-2.61E-05	2.116E-03	-1.99E-06	2.718E-04	4.42E-07
848.	0.10	.002365	0.87	0.03	5.12	0.0	-1.238E-03	1.63E-05	-7.284E-04	-1.43E-06	-2.501E-03	2.82E-05	-1.127E-03	2.61E-05	2.296E-03	3.49E-06	2.728E-04	1.78E-07
852.	0.10	.002366	0.86	-0.02	0.02	0.0	1.526E-04	2.53E-05	7.692E-05	-4.61E-06	2.058E-04	6.28E-05	1.628E-04	1.85E-06	1.155E-03	-6.69E-05	3.072E-04	-8.62E-06
849.	0.10	.002363	0.86	-0.13	-0.09	0.0	2.229E-04	6.44E-05	1.460E-04	2.84E-05	4.348E-04	2.09E-04	3.926E-04	1.58E-04	1.180E-03	-2.42E-06	3.321E-04	6.01E-06
850.	0.10	.002367	0.86	-1.00	-1.84	0.0	6.058E-04	-1.18E-05	5.287E-04	-1.13E-05	1.318E-03	1.42E-06	1.076E-03	2.75E-05	6.112E-04	-8.77E-05	4.041E-04	-1.60E-05
848.	0.10	.002367	0.86	-1.21	-3.69	0.0	1.116E-03	-6.02E-06	8.725E-04	5.85E-06	2.280E-03	-4.76E-05	1.555E-03	-5.30E-05	3.633E-04	8.02E-05	4.675E-04	1.38E-05
STANDARD DEVIATIONS								3.60E-05		1.57E-05		1.10E-04		7.77E-05		6.27E-05		1.06E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.158E-05		-1.703E-04		-2.052E-04		-4.256E-04		1.368E-04		-9.256E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.712E-04		-1.570E-04		-5.222E-04		-2.537E-04		2.088E-04		-7.587E-06	
RESIDUAL							1.341E-04		8.138E-05		1.509E-04		1.573E-04		1.220E-03		3.138E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
849.	0.09	.002366	3.85	0.13	1.56	0.0	1.466E-05	8.57E-06	-2.153E-05	8.06E-06	-3.309E-04	2.27E-05	-2.876E-05	3.09E-05	5.756E-03	1.96E-05	3.565E-04	-4.39E-06
847.	0.10	.002367	3.84	0.03	2.55	0.0	-2.409E-04	-3.59E-06	-1.734E-04	7.36E-06	-8.487E-04	-6.16E-05	-3.033E-04	-1.95E-05	5.486E-03	7.56E-05	3.528E-04	-7.69E-06
848.	0.10	.002366	3.85	0.27	3.42	0.0	-4.676E-04	5.03E-06	-3.527E-04	-1.87E-06	-1.294E-03	1.05E-05	-6.366E-04	-4.23E-06	6.164E-03	-4.11E-06	3.335E-04	4.46E-07
848.	0.10	.002366	3.85	0.24	5.32	0.0	-9.510E-04	-1.43E-06	-6.632E-04	-3.96E-06	-2.179E-03	2.46E-05	-1.130E-03	8.32E-06	6.510E-03	-4.19E-05	3.229E-04	4.33E-06
852.	0.05	.002366	3.84	-0.00	0.48	0.0	2.535E-04	-3.23E-05	1.541E-04	-7.69E-06	1.057E-04	-1.12E-04	2.290E-04	-6.65E-05	5.486E-03	1.84E-05	3.846E-04	3.26E-06
850.	0.10	.002364	3.83	-0.09	0.07	0.0	4.181E-04	2.37E-05	2.367E-04	-1.90E-06	5.642E-04	1.15E-04	4.980E-04	5.10E-05	5.282E-03	-7.17E-05	3.961E-04	4.04E-06
STANDARD DEVIATIONS								2.39E-05		8.19E-06		1.01E-04		5.31E-05		6.83E-05		6.44E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-6.633E-05		-1.135E-04		-4.155E-04		-4.613E-04		3.426E-04		-8.226E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.516E-04		-1.636E-04		-4.784E-04		-2.723E-04		2.060E-04		-8.709E-06	
RESIDUAL							4.065E-04		2.400E-04		4.452E-04		4.242E-04		5.370E-03		3.851E-04	
850.	0.10	.002361	7.82	-0.79	3.07	0.0	3.591E-06	1.27E-05	-1.256E-05	-3.71E-06	-3.294E-04	4.77E-05	-2.617E-05	-4.35E-05	1.160E-02	2.56E-04	6.164E-04	-1.34E-05
850.	0.05	.002361	7.80	-1.28	3.85	0.0	-2.849E-04	-6.21E-05	-1.080E-04	6.33E-06	-9.265E-04	-2.40E-04	-1.864E-04	-1.42E-05	1.094E-02	-3.73E-04	6.055E-04	-3.26E-06
848.	0.10	.002360	7.80	-0.96	4.99	0.0	-4.854E-04	7.46E-06	-2.855E-04	2.35E-05	-1.323E-03	-1.34E-05	-5.859E-04	-3.54E-06	1.165E-02	-3.56E-05	5.863E-04	4.20E-06
851.	0.10	.002360	7.79	-0.86	7.02	0.0	-9.469E-04	4.33E-05	-6.611E-04	-2.44E-05	-2.140E-03	1.98E-04	-1.211E-03	3.95E-05	1.233E-02	1.71E-04	5.429E-04	2.97E-05
847.	0.10	.002363	7.82	-0.66	3.04	0.0	-2.131E-06	-5.59E-06	-5.863E-07	9.27E-06	-4.097E-04	-2.56E-05	-8.089E-06	-1.79E-05	1.146E-02	6.83E-05	6.190E-04	-3.19E-06
850.	0.10	.002364	7.82	-0.52	1.91	0.0	2.354E-04	-5.09E-05	1.680E-04	4.43E-06	2.459E-05	-1.29E-04	3.576E-04	2.87E-06	1.120E-02	-9.86E-06	6.315E-04	-1.64E-05
850.	0.11	.002360	7.82	-0.39	2.02	0.0	2.814E-04	1.68E-05	1.318E-04	-8.78E-06	8.749E-05	1.14E-05	2.759E-04	-2.58E-05	1.136E-02	7.14E-05	6.442E-04	8.62E-06
850.	0.10	.002360	7.81	-0.51	1.09	0.0	4.745E-04	-1.68E-05	2.927E-04	-1.98E-06	4.808E-04	-8.27E-05	6.212E-04	1.40E-06	1.097E-02	-6.66E-05	6.744E-04	2.07E-06
850.	0.10	.002360	7.81	-0.82	0.08	0.0	7.457E-04	1.77E-05	4.754E-04	7.71E-06	1.184E-03	6.68E-05	1.023E-03	3.84E-05	1.069E-02	-7.25E-06	7.172E-04	-6.29E-06
848.	0.05	.002360	7.83	-0.75	0.11	0.0	7.337E-04	1.01E-05	4.623E-04	1.98E-06	1.158E-03	6.66E-05	1.002E-03	3.55E-05	1.031E-02	-4.22E-04	7.204E-04	2.33E-06
846.	0.05	.002360	7.82	-1.30	-1.65	0.0	1.166E-03	2.73E-05	7.497E-04	-1.43E-05	2.164E-03	1.00E-04	1.595E-03	-1.27E-05	1.048E-02	3.49E-04	8.333E-04	2.50E-05
STANDARD DEVIATIONS								3.59E-05		1.44E-05		1.33E-04		3.07E-05		2.62E-04		1.99E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.905E-05		-4.086E-05		-1.674E-04		-1.301E-04		4.010E-04		-6.553E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.476E-04		-1.595E-04		-4.993E-04		-3.230E-04		2.135E-04		-3.068E-05	
RESIDUAL							7.809E-04		4.475E-04		1.022E-03		9.051E-04		1.101E-02		6.722E-04	
855.	0.10	.002386	0.87	-0.08	0.36	0.0	2.191E-05	-4.81E-06	-1.437E-05	-5.11E-06	-1.243E-04	-1.15E-05	2.078E-05	-1.07E-05	1.287E-03	1.13E-05	3.161E-04	6.72E-06
855.	0.10	.002386	1.88	-0.08	0.42	0.0	1.681E-04	7.54E-06	4.200E-05	8.94E-06	1.372E-04	1.92E-05	1.122E-04	1.86E-05	2.826E-03	-2.52E-05	3.322E-04	-1.29E-05
852.	0.10	.002386	2.85	-0.09	0.48	0.0	2.763E-04	-4.73E-06	7.667E-05	-5.03E-06	3.207E-04	-1.14E-05	1.470E-04	-1.05E-05	4.164E-03	1.16E-05	3.574E-04	6.55E-06
854.	0.05	.002384	4.82	-0.01	0.53	0.0	4.653E-04	2.55E-06	1.258E-04	3.14E-06	6.192E-04	6.42E-06	2.285E-04	6.51E-06	6.704E-03	-1.04E-05	4.405E-04	-4.82E-06
857.	0.10	.002386	6.82	0.11	0.62	0.0	6.899E-04	-1.89E-06	1.619E-04	-1.93E-06	9.697E-04	-4.79E-06	2.962E-04	-4.04E-06	9.927E-03	5.16E-06	5.897E-04	2.24E-06
STANDARD DEVIATIONS								1.06E-05		1.20E-05		2.64E-05		2.51E-05		3.53E-05		1.68E-05
COLLECTIVE PITCH DERIVATIVES							6.360E-05		2.957E-05		1.007E-04		3.188E-05		7.849E-04		-4.709E-06	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.397E-05		-3.481E-04		-2.178E-04		-2.714E-04		5.167E-03		9.196E-04	
LATERAL CYCLIC PITCH DERIVATIVES							1.082E-03		2.368E-04		2.046E-03		5.059E-04		1.155E-02		5.035E-04	
RESIDUAL							-4.153E-04		-1.501E-04		-9.553E-04		-2.014E-04		-3.125E-03		2.104E-04	
849.	0.10	.002355	3.93	-0.16	1.56	0.0	-2.603E-06	2.10E-05	-7.238E-06	1.67E-05	-2.549E-04	4.50E-05	-2.002E-05	1.72E-05	5.534E-03	-1.08E-04	4.348E-04	-8.19E-05
849.	0.10	.002355	4.92	-0.15	1.49	0.0	1.059E-04	3.23E-05	2.915E-05	8.76E-06	-1.126E-04	6.02E-05	4.868E-05	2.02E-05	7.375E-03	1.87E-04	4.876E-04	-3.99E-05
845.	0.10	.002350	5.92	-0.08	1.47	0.0	2.059E-04	6.54E-06	6.977E-05	3.14E-07	5.093E-06	-2.84E-06	9.773E-05	4.56E-06	8.752E-03	1.04E-04	5.398E-04	4.12E-06
850.	0.05	.002345	7.96	-0.12	1.51	0.0	3.687E-04	-2.78E-05	1.021E-04	-6.63E-06	2.984E-04	-3.15E-05	1.264E-04	-2.11E-05	1.096E-02	-2.55E-04	6.910E-04	1.79E-05
845.	0.10	.002345	9.96	-0.12	1.71	0.0	6.033E-04	-1.48E-05	1.125E-04	-1.14E-05	7.011E-04	-3.15E-05	1.443E-04	-1.42E-05	1.420E-02	4.61E-05	9.142E-04	5.20E-05
848.	0.10	.002345	2.93	-0.20	1.47	0.0	-1.282E-04	1.52E-05	-2.537E-05	1.82E-05	-4.827E-04	3.01E-05	-1.905E-05	3.52E-05	4.558E-03	8.46E-05	4.000E-04	-4.60E-05
845.	0.10	.002347	1.96	-0.24	1.45	0.0	-2.487E-04	1.34E-05	-7.315E-05	5.00E-07	-6.862E-04	8.26E-06	-5.829E-05	-1.34E-06	3.141E-03	8.02E-05	3.883E-04	-1.30E-05
847.	0.10	.002347	-0.06	-0.22	1.42	0.0	-5.123E-04	-5.04E-05	-1.461E-04	-2.64E-05	-1.091E-03	-7.77E-05	-2.051E-04	-4.46E-05	3.560E-04	-1.48E-04	3.872E-04	1.07E-04
STANDARD DEVIATIONS								3.75E-05		1.97E-05		6.06E-05		3.50E-05		2.00E-04		7.90E-05
COLLECTIVE PITCH DERIVATIVES							1.018E-04		2.803E-05		1.574E-04		3.891E-05		1.276E-03		4.899E-05	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.434E-04		2.302E-04		4.211E-04		2.744E-04		2.587E-03		-4.405E-04	
LATERAL CYCLIC PITCH DERIVATIVES							9.739E-05		-2.087E-04		4.579E-04		-3.417E-04		2.058E-03		4.691E-04	
RESIDUAL							-5.202E-04		2.287E-04		-1.565E-03		3.873E-04		-1.701E-03		-4.791E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
848.	0.11	.002346	7.96	-0.73	2.66	0.0	2.130E-05	3.02E-05	-1.503E-05	-8.39E-06	-3.833E-04	3.96E-05	-9.630E-05	-3.43E-05	1.172E-02	1.56E-04	6.965E-04	-8.87E-06
850.	0.10	.002346	8.97	-0.72	2.74	0.0	8.731E-05	-7.80E-06	4.576E-06	2.70E-06	-2.558E-04	-1.44E-05	-7.711E-05	-1.50E-05	1.286E-02	-5.00E-05	7.887E-04	-4.15E-06
850.	0.10	.002347	9.95	-0.68	2.90	0.0	1.728E-04	-7.30E-06	1.324E-05	1.58E-05	-6.613E-05	4.66E-06	-4.168E-05	1.25E-05	1.415E-02	-8.66E-05	8.955E-04	-3.54E-05
851.	0.09	.002344	12.00	-0.69	3.24	0.0	3.593E-04	-4.91E-07	-3.674E-05	-9.62E-06	3.071E-04	-3.84E-06	-9.808E-05	1.50E-05	1.705E-02	1.89E-05	1.228E-03	2.66E-05
852.	0.10	.002347	6.96	-0.61	2.49	0.0	-1.347E-04	-2.87E-05	2.101E-05	6.36E-06	-6.965E-04	-5.93E-05	6.445E-05	2.47E-05	1.002E-02	-1.24E-04	6.376E-04	2.86E-05
850.	0.10	.002346	5.94	-0.52	2.52	0.0	-2.173E-04	2.09E-05	-1.118E-05	-4.40E-07	-8.112E-04	2.64E-05	2.244E-05	-4.80E-05	8.848E-03	1.24E-04	5.845E-04	-2.44E-05
853.	0.10	.002348	3.93	-0.63	2.44	0.0	-4.543E-04	-1.83E-06	-6.740E-05	-1.44E-05	-1.149E-03	2.36E-05	5.643E-05	6.45E-05	5.944E-03	-4.65E-05	4.773E-04	2.70E-05
846.	0.10	.002341	1.94	-0.69	2.59	0.0	-7.158E-04	-5.10E-06	-1.350E-04	7.98E-06	-1.523E-03	-1.85E-05	-1.345E-04	-1.95E-05	3.251E-03	-1.32E-05	4.277E-04	-9.25E-06
STANDARD DEVIATIONS								2.41E-05		1.35E-05		4.16E-05		4.80E-05		1.43E-04		3.27E-05
COLLECTIVE PITCH DERIVATIVES							1.184E-04		2.559E-05		1.774E-04		1.621E-05		1.372E-03		3.971E-05	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-6.996E-05		8.324E-05		-2.277E-04		6.196E-04		-1.287E-04		2.934E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-1.814E-04		-2.217E-04		4.900E-05		-2.463E-04		-4.101E-05		5.564E-04	
RESIDUAL							-5.200E-04		4.372E-04		-2.133E-03		9.174E-04		6.123E-04		-8.770E-04	
850.	0.09	.002327	1.00	0.11	0.58	0.07	1.295E-05	-5.59E-06	-3.683E-06	1.36E-06	-1.466E-05	-9.72E-06	-7.340E-05	2.61E-06	1.697E-03	-8.10E-05	4.032E-04	2.03E-06
850.	0.08	.002327	1.00	0.13	0.59	-1.16	-3.313E-06	1.58E-06	-1.069E-05	2.25E-08	-3.856E-05	6.42E-06	-8.976E-05	2.24E-07	1.512E-03	-3.19E-05	3.949E-04	-1.64E-06
850.	0.08	.002327	1.00	0.13	0.66	-3.04	-6.476E-05	-1.34E-05	-2.125E-05	2.47E-06	-1.525E-04	-2.30E-05	-1.206E-04	5.64E-06	1.162E-03	-9.61E-05	3.911E-04	-2.66E-06
850.	0.09	.002328	1.00	0.07	0.54	-5.27	-3.297E-05	3.76E-06	-2.124E-05	-1.21E-06	-1.101E-04	4.16E-06	-1.093E-04	-2.43E-06	8.566E-04	9.48E-05	3.904E-04	-7.88E-07
848.	0.09	.002328	1.00	0.16	0.69	1.16	1.507E-05	2.10E-05	-1.541E-05	-3.64E-06	-6.648E-06	3.50E-05	-1.105E-04	-8.83E-06	2.189E-03	1.24E-04	4.103E-04	7.55E-06
849.	0.09	.002328	1.00	0.13	0.72	3.11	1.236E-05	2.34E-06	-9.740E-06	-1.26E-08	-1.156E-05	6.30E-06	-1.030E-04	-2.53E-07	2.477E-03	-3.80E-05	4.146E-04	1.30E-06
849.	0.09	.002327	1.00	0.17	0.72	5.23	2.552E-05	-9.65E-06	-5.715E-07	1.02E-06	1.690E-05	-1.92E-05	-7.978E-05	2.96E-06	2.898E-03	2.86E-05	4.081E-04	-5.21E-06
STANDARD DEVIATIONS								1.60E-05		2.81E-06		2.78E-05		6.62E-06		1.20E-04		5.78E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-8.778E-05		1.710E-05		1.958E-05		7.716E-05		-1.114E-03		-1.272E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-3.174E-04		-1.012E-04		-5.816E-04		-3.382E-04		1.161E-03		4.047E-05	
ROTOR PITCH DERIVATIVES							1.316E-05		3.357E-06		2.424E-05		7.454E-06		1.509E-04		2.567E-06	
RESIDUAL							2.103E-04		5.110E-05		3.261E-04		1.095E-04		1.221E-03		3.920E-04	
850.	0.10	.002343	4.00	-0.15	1.40	0.08	-3.279E-06	1.88E-05	3.655E-06	1.45E-05	-2.357E-04	4.80E-05	1.950E-05	3.63E-05	6.277E-03	-5.54E-05	4.235E-04	-1.89E-06
850.	0.10	.002342	4.00	-0.21	1.39	1.17	1.268E-05	6.58E-06	1.082E-05	1.60E-05	-2.164E-04	2.22E-05	2.413E-05	2.92E-05	6.480E-03	-1.72E-04	4.445E-04	1.34E-05
850.	0.09	.002344	4.00	-0.22	1.36	2.13	2.569E-05	-3.69E-06	2.636E-05	1.71E-05	-1.934E-04	2.67E-06	5.582E-05	2.88E-05	6.777E-03	-6.18E-05	4.348E-04	-2.80E-06
848.	0.10	.002344	4.00	-0.22	1.37	3.13	5.439E-05	1.10E-05	-2.347E-06	-2.18E-05	-1.419E-04	2.52E-05	1.107E-05	-3.60E-05	7.140E-03	1.65E-05	4.427E-04	1.62E-06
849.	0.10	.002341	4.00	-0.24	1.46	5.26	3.876E-05	-1.84E-05	6.687E-06	-1.47E-05	-1.842E-04	-5.12E-05	1.295E-05	-3.15E-05	8.193E-03	2.12E-04	4.401E-04	-1.90E-06
850.	0.10	.002342	4.00	-0.23	1.35	-0.89	-2.501E-06	1.01E-05	-9.244E-06	1.54E-05	-2.669E-04	1.76E-05	-1.113E-05	2.87E-05	5.975E-03	-1.91E-05	4.274E-04	9.23E-07
850.	0.10	.002342	4.00	-0.12	1.34	-1.87	-5.267E-05	-1.12E-05	-1.958E-05	-4.56E-06	-3.555E-04	-3.17E-05	-3.372E-05	-1.56E-05	5.671E-03	8.03E-05	4.252E-04	2.26E-06
849.	0.10	.002342	4.00	-0.19	1.31	-2.86	-4.745E-05	-5.44E-06	-3.829E-05	-7.03E-06	-3.599E-04	-2.68E-05	-5.726E-05	-1.01E-05	5.445E-03	1.59E-04	4.222E-04	-1.48E-07
848.	0.10	.002344	4.00	-0.18	1.36	-4.95	-8.787E-05	-4.33E-06	-7.798E-05	-1.50E-05	-4.254E-04	-6.92E-06	-1.461E-04	-2.97E-05	4.893E-03	4.26E-05	4.093E-04	-2.59E-07
STANDARD DEVIATIONS								1.56E-05		1.59E-05		4.04E-05		3.83E-05		1.52E-04		6.38E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.432E-04		1.581E-04		-1.121E-04		3.335E-04		-8.869E-04		-5.066E-06	
LATERAL CYCLIC PITCH DERIVATIVES							-2.454E-04		-2.058E-04		-3.963E-04		-5.414E-04		3.089E-03		-9.036E-05	
ROTOR PITCH DERIVATIVES							1.532E-05		1.141E-05		3.114E-05		2.291E-05		2.714E-04		4.016E-06	
RESIDUAL							2.999E-04		3.064E-04		2.536E-04		7.913E-04		1.846E-03		5.512E-04	
850.	0.10	.002307	8.00	-0.75	3.54	0.10	2.227E-05	6.17E-07	-8.877E-07	1.12E-06	-1.017E-04	7.39E-06	-2.211E-04	9.72E-06	1.130E-02	-1.94E-04	7.239E-04	-8.77E-07
848.	0.10	.002306	8.00	-1.01	3.73	1.26	4.963E-05	4.72E-06	-1.017E-05	1.25E-05	-1.131E-04	1.85E-05	-2.963E-04	2.90E-05	1.190E-02	-3.40E-04	7.370E-04	4.01E-06
850.	0.10	.002307	8.00	-0.93	3.72	3.17	6.260E-05	-8.80E-06	3.730E-05	4.43E-06	-8.840E-05	-1.69E-05	-2.025E-04	7.42E-06	1.251E-02	-5.77E-05	7.467E-04	2.28E-06
849.	0.10	.002306	8.00	-0.90	3.83	5.29	1.021E-04	6.39E-07	4.851E-05	-1.67E-05	-3.509E-05	-6.06E-06	-2.110E-04	-3.59E-05	1.332E-02	1.37E-04	7.566E-04	-3.24E-06
850.	0.10	.002306	8.00	-0.79	3.61	-0.88	1.366E-05	6.73E-06	-3.374E-05	1.18E-05	-1.406E-04	8.65E-06	-3.323E-04	6.90E-06	1.133E-02	-8.43E-05	7.319E-04	1.07E-05
851.	0.11	.002306	8.00	-1.03	3.47	-2.82	-8.937E-06	4.05E-06	-7.246E-05	-2.42E-08	-1.999E-04	3.43E-06	-3.612E-04	-8.63E-06	1.097E-02	-2.77E-06	7.064E-04	4.37E-06
850.	0.11	.002304	8.00	-0.90	3.48	-4.98	-5.745E-05	-7.23E-06	-1.435E-04	-1.38E-05	-2.660E-04	-1.58E-05	-4.971E-04	-2.18E-05	1.050E-02	6.82E-05	6.875E-04	-5.65E-06
STANDARD DEVIATIONS								8.45E-06		1.62E-05		1.88E-05		3.10E-05		2.50E-04		8.13E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-3.148E-05		3.004E-05		9.643E-05		5.323E-05		-7.639E-04		1.693E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.232E-05		-2.303E-04		-1.503E-04		-7.563E-04		1.587E-03		3.338E-05	
ROTOR PITCH DERIVATIVES							1.517E-05		2.682E-05		2.668E-05		5.494E-05		2.134E-04		5.364E-06	
RESIDUAL							3.988E-05		8.324E-04		4.925E-04		2.479E-03		5.280E-03		6.189E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
848.	0.15	.002323	0.93	-0.10	0.41	0.0	1.551E-05	-3.12E-05	-2.458E-05	2.61E-05	-1.502E-04	-1.04E-04	1.391E-05	1.32E-04	1.509E-03	-1.75E-04	4.245E-04	9.58E-06
848.	0.15	.002323	0.93	0.22	0.27	0.0	1.464E-04	-7.93E-06	-8.645E-05	6.85E-06	1.328E-04	-2.21E-06	-2.200E-04	1.69E-05	1.810E-03	1.47E-05	3.947E-04	-5.20E-06
847.	0.15	.002321	0.92	0.49	0.30	0.0	2.459E-04	4.26E-05	-1.567E-04	-2.04E-05	3.074E-04	7.91E-05	-4.707E-04	-1.42E-04	1.966E-03	8.89E-05	3.877E-04	-5.19E-07
848.	0.15	.002323	0.93	2.08	0.14	0.0	6.083E-04	5.57E-06	-3.564E-04	-2.07E-05	9.760E-04	4.39E-05	-9.406E-04	-4.30E-05	2.510E-03	1.13E-04	3.016E-04	-1.43E-05
849.	0.15	.002323	0.93	3.79	0.27	0.0	9.712E-04	3.76E-05	-6.459E-04	2.02E-06	1.615E-03	5.56E-05	-1.561E-03	-7.04E-05	2.501E-03	-2.52E-05	2.483E-04	7.74E-06
850.	0.15	.002315	0.93	-0.64	1.04	0.0	-3.477E-04	-5.37E-05	2.904E-05	2.69E-05	-6.561E-04	-1.34E-04	3.129E-04	2.05E-04	1.407E-03	-5.15E-05	4.579E-04	1.43E-05
850.	0.15	.002312	0.93	-1.46	1.41	0.0	-5.726E-04	-3.39E-05	5.772E-05	-1.40E-05	-1.080E-03	-8.02E-05	5.008E-04	6.40E-05	1.100E-03	-6.71E-05	4.745E-04	-8.33E-06
849.	0.15	.002316	0.93	-3.18	1.76	0.0	-9.862E-04	2.82E-05	3.766E-04	1.44E-05	-1.789E-03	4.02E-05	9.650E-04	-7.60E-05	6.851E-04	9.28E-05	5.482E-04	-1.39E-05
849.	0.15	.002314	0.93	-4.19	1.77	0.0	-1.188E-03	4.87E-05	4.965E-04	-2.12E-05	-2.134E-03	1.02E-04	1.288E-03	-1.07E-04	2.826E-04	9.36E-06	6.176E-04	1.06E-05
STANDARD DEVIATIONS								5.39E-05		2.29E-05		9.87E-05		1.36E-04		1.07E-04		1.27E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.181E-04		-1.551E-04		3.986E-04		-3.506E-04		3.163E-04		-4.456E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.874E-04		-4.887E-05		-4.092E-04		5.692E-05		-8.545E-05		7.067E-06	
RESIDUAL							1.845E-04		-4.568E-05		1.586E-04		-1.752E-04		1.749E-03		4.078E-04	
850.	0.15	.002312	3.94	-0.76	1.52	0.0	-2.122E-05	-1.51E-05	2.794E-05	6.11E-05	-4.129E-04	-9.64E-05	1.980E-04	2.30E-04	6.534E-03	-1.56E-04	5.097E-04	1.53E-05
850.	0.15	.002312	3.93	0.02	1.04	0.0	2.097E-04	-3.80E-05	-6.147E-05	3.90E-05	-6.761E-05	-1.67E-04	-1.385E-04	2.08E-04	6.529E-03	-1.48E-04	4.501E-04	4.22E-06
851.	0.15	.002310	3.93	0.52	0.86	0.0	4.154E-04	2.04E-05	-1.559E-04	8.38E-07	3.765E-04	2.44E-05	-5.642E-04	-1.34E-05	7.293E-03	1.11E-05	4.228E-04	6.96E-06
851.	0.15	.002311	3.93	1.28	0.78	0.0	6.057E-04	5.29E-06	-3.117E-04	-2.95E-05	8.220E-04	9.57E-05	-1.019E-03	-1.44E-04	7.634E-03	1.02E-04	3.619E-04	-8.87E-06
849.	0.15	.002312	3.93	2.76	0.85	0.0	9.861E-04	1.47E-05	-5.835E-04	-3.26E-05	1.526E-03	9.58E-05	-1.682E-03	-1.69E-04	8.061E-03	1.25E-04	2.769E-04	-7.96E-06
850.	0.15	.002313	3.93	-1.48	1.65	0.0	-2.209E-04	-1.62E-05	7.728E-05	4.09E-06	-7.933E-04	-1.21E-04	3.714E-04	1.01E-04	6.251E-03	-8.68E-05	5.430E-04	5.95E-06
849.	0.15	.002304	3.93	-2.29	1.73	0.0	-4.103E-04	1.00E-05	2.043E-04	1.98E-07	-1.035E-03	3.24E-05	6.527E-04	3.75E-05	6.172E-03	-6.31E-06	5.761E-04	-8.56E-06
849.	0.15	.002301	3.94	-3.97	2.07	0.0	-8.605E-04	2.64E-05	4.168E-04	-3.04E-05	-1.812E-03	8.67E-05	1.172E-03	-1.47E-04	5.552E-03	1.27E-05	6.807E-04	-3.58E-06
849.	0.15	.002301	3.93	-4.70	2.22	0.0	-1.099E-03	-7.39E-06	5.404E-04	-1.26E-05	-2.213E-03	4.94E-05	1.523E-03	-1.03E-04	5.464E-03	1.47E-04	7.244E-04	-3.53E-06
STANDARD DEVIATIONS								2.40E-05		3.72E-05		1.17E-04		1.77E-04		1.30E-04		9.80E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.557E-04		-1.749E-04		4.795E-04		-4.290E-04		2.887E-04		-5.827E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.116E-04		-1.470E-04		-8.182E-05		-4.686E-05		-3.378E-04		5.756E-06	
RESIDUAL							3.587E-04		5.700E-05		1.739E-04		-2.876E-04		7.424E-03		4.411E-04	
848.	0.15	.002304	7.96	-1.60	2.77	0.0	-2.750E-05	-2.11E-05	7.769E-07	1.83E-05	-5.043E-04	-6.81E-05	9.939E-05	1.34E-04	1.317E-02	-3.98E-05	7.393E-04	-2.32E-06
851.	0.15	.002304	7.95	-0.82	2.48	0.0	1.494E-04	-5.42E-05	-1.019E-04	3.33E-05	-1.820E-04	-6.49E-05	-1.398E-04	1.87E-04	1.347E-02	-9.00E-05	6.749E-04	-5.64E-06
850.	0.15	.002304	7.95	-0.00	2.31	0.0	3.761E-04	-2.28E-05	-2.381E-04	1.59E-05	1.561E-04	-5.53E-05	-5.362E-04	8.86E-05	1.390E-02	1.32E-05	6.163E-04	-3.74E-06
852.	0.15	.002304	7.94	1.27	2.06	0.0	6.991E-04	-3.54E-06	-4.370E-04	3.27E-06	7.515E-04	2.45E-05	-1.146E-03	-5.43E-05	1.438E-02	-3.56E-06	5.298E-04	4.28E-06
850.	0.15	.002300	7.95	2.26	2.04	0.0	9.728E-04	6.84E-05	-6.420E-04	-6.30E-05	1.289E-03	1.69E-04	-1.744E-03	-3.00E-04	1.485E-02	1.59E-04	4.599E-04	3.02E-06
851.	0.15	.002301	7.95	-2.39	2.70	0.0	-1.830E-04	-3.00E-05	1.300E-04	3.82E-05	-9.046E-04	-1.54E-04	4.111E-04	1.67E-04	1.291E-02	-8.04E-05	7.973E-04	2.59E-06
852.	0.16	.002301	7.95	-3.38	2.79	0.0	-3.447E-04	2.42E-05	2.319E-04	-1.07E-06	-1.163E-03	-1.64E-05	6.801E-04	8.01E-05	1.256E-02	-9.92E-05	8.626E-04	-2.69E-06
851.	0.15	.002302	7.95	-5.13	3.22	0.0	-7.765E-04	2.18E-05	4.923E-04	2.79E-06	-1.817E-03	3.53E-05	1.151E-03	-9.06E-05	1.186E-02	-8.07E-05	1.002E-03	5.33E-06
850.	0.15	.002301	7.95	-6.26	3.31	0.0	-1.024E-03	1.70E-05	6.025E-04	-4.74E-05	-2.172E-03	1.31E-04	1.435E-03	-2.11E-04	1.179E-02	2.30E-04	1.076E-03	-6.32E-07
STANDARD DEVIATIONS								4.25E-05		3.96E-05		1.18E-04		2.01E-04		1.36E-04		4.50E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.005E-04		-1.401E-04		3.978E-04		-3.553E-04		3.023E-04		-6.898E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.869E-04		2.807E-05		-2.712E-05		4.947E-05		-4.330E-04		2.497E-05	
RESIDUAL							8.321E-04		-3.155E-04		2.757E-04		-7.406E-04		1.489E-02		5.620E-04	
853.	0.15	.002345	8.00	-0.31	1.99	0.0	1.588E-05	-2.85E-05	2.315E-05	1.82E-05	-1.155E-04	-6.11E-05	-9.116E-05	1.50E-05	8.264E-03	-7.67E-05	7.066E-04	-4.64E-06
851.	0.16	.002348	8.00	0.64	1.97	0.0	1.806E-04	-1.35E-05	-1.436E-04	2.36E-05	2.606E-04	4.48E-06	-4.313E-04	2.88E-05	8.443E-03	2.26E-04	6.729E-04	-1.77E-05
852.	0.15	.002347	8.00	1.13	1.83	0.0	2.719E-04	8.81E-06	-2.504E-04	-6.41E-06	4.118E-04	2.20E-05	-5.917E-04	-3.77E-06	8.366E-03	1.26E-04	6.428E-04	-2.85E-05
851.	0.18	.002348	8.00	2.69	1.67	0.0	5.181E-04	1.68E-05	-5.388E-04	-2.35E-05	8.842E-04	1.01E-05	-1.144E-03	-2.90E-05	7.911E-03	-2.15E-04	6.606E-04	3.22E-05
852.	0.16	.002343	8.00	-1.11	1.81	0.0	-9.931E-05	-4.52E-06	1.975E-04	2.88E-05	-3.633E-04	-5.47E-06	3.206E-04	4.15E-05	8.633E-03	5.28E-05	7.376E-04	2.24E-05
853.	0.16	.002344	8.00	-1.95	1.95	0.0	-2.100E-04	9.64E-06	2.774E-04	-3.28E-05	-5.899E-04	1.80E-05	4.942E-04	-4.61E-05	8.568E-03	-3.87E-05	7.215E-04	-2.02E-05
851.	0.16	.002341	8.00	-3.69	2.53	0.0	-4.469E-04	1.12E-05	5.655E-04	-7.84E-06	-1.049E-03	1.21E-05	9.441E-04	-6.82E-06	8.392E-03	-6.76E-05	8.327E-04	1.60E-05
STANDARD DEVIATIONS								1.99E-05		2.94E-05		3.48E-05		3.82E-05		1.79E-04		2.89E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.593E-04		-1.836E-04		3.319E-04		-3.825E-04		-1.441E-04		-2.041E-05	
LATERAL CYCLIC PITCH DERIVATIVES							6.483E-05		-5.497E-05		2.103E-04		-4.351E-04		-6.835E-04		6.813E-05	
RESIDUAL							-3.497E-05		1.367E-04		-3.692E-04		6.404E-04		9.656E-03		5.693E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
850.	0.15	.002359	12.00	-4.75	5.58	0.0	-3.078E-05	2.88E-05	2.802E-05	-2.12E-05	-4.976E-04	-1.10E-05	-2.246E-04	-1.82E-05	1.938E-02	1.36E-04	1.473E-03	-4.12E-05
849.	0.15	.002358	12.00	-3.56	5.68	0.0	1.768E-04	6.72E-05	-1.309E-04	-3.86E-05	-8.580E-05	7.37E-05	-5.621E-04	-7.31E-05	1.592E-02	2.97E-04	1.374E-03	-3.81E-05
850.	0.15	.002358	12.00	-2.34	5.71	0.0	2.784E-04	-8.93E-06	-2.514E-04	-1.00E-05	1.601E-04	-4.24E-05	-8.139E-04	-3.82E-05	2.000E-02	-2.73E-05	1.284E-03	-2.46E-05
850.	0.15	.002356	12.00	0.26	5.57	0.0	6.587E-04	-1.70E-05	-5.544E-04	1.37E-05	1.082E-03	3.24E-05	-1.338E-03	3.30E-05	2.095E-02	2.72E-05	1.106E-03	1.60E-05
850.	0.15	.002356	12.00	1.21	5.47	0.0	7.886E-04	-3.09E-05	-6.728E-04	1.66E-05	1.348E-03	-2.83E-05	-1.567E-03	1.66E-05	2.102E-02	-2.31E-04	1.048E-03	3.65E-05
850.	0.14	.002355	12.00	-5.61	5.75	0.0	-1.986E-04	-3.53E-06	1.771E-04	1.32E-05	-8.477E-04	-3.32E-05	3.119E-05	4.80E-05	1.697E-02	3.54E-05	1.588E-03	2.73E-06
849.	0.15	.002355	12.00	-6.65	5.77	0.0	-3.332E-04	1.53E-05	3.064E-04	1.37E-05	-1.123E-03	1.67E-05	2.620E-04	3.84E-05	1.857E-02	-1.67E-05	1.682E-03	8.98E-06
850.	0.15	.002355	12.00	-8.84	6.03	0.0	-7.129E-04	-3.08E-05	5.804E-04	6.48E-06	-1.907E-03	-4.53E-06	7.118E-04	-3.39E-06	1.767E-02	-1.41E-04	1.878E-03	2.33E-05
850.	0.15	.002354	12.00	-10.35	5.45	0.0	-8.954E-04	-1.98E-05	7.397E-04	5.93E-06	-2.158E-03	-9.80E-07	1.103E-03	-2.70E-06	1.732E-02	-6.82E-05	2.004E-03	1.40E-05
STANDARD DEVIATIONS								3.71E-05		2.21E-05		4.20E-05		4.53E-05		1.77E-04		3.21E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.467E-04		-1.232E-04		3.061E-04		-2.326E-04		3.341E-04		-8.469E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-4.749E-05		4.435E-05		-3.568E-04		-6.926E-05		-1.335E-04		-1.365E-05	
RESIDUAL							9.020E-04		-7.830E-04		2.957E-03		-9.248E-04		2.158E-02		1.188E-03	
850.	0.16	.002358	0.94	-0.23	0.50	0.0	-2.526E-05	-3.59E-05	1.368E-06	-2.39E-05	-2.561E-04	-1.31E-04	7.178E-05	-7.18E-05	1.441E-03	-1.54E-05	3.469E-04	-6.40E-06
850.	0.16	.002353	0.94	-0.22	1.23	0.0	-2.651E-04	-4.45E-05	-1.629E-04	-3.14E-05	-7.161E-04	-1.50E-04	-2.589E-04	-8.41E-05	1.574E-03	3.01E-05	3.266E-04	-1.20E-05
845.	0.16	.002357	0.94	-0.19	2.06	0.0	-4.953E-04	-5.83E-06	-3.350E-04	-2.20E-05	-1.158E-03	-8.30E-05	-6.157E-04	-7.33E-05	1.702E-03	6.17E-05	3.044E-04	-1.66E-05
848.	0.16	.002353	0.94	-0.09	3.88	0.0	-1.037E-03	2.43E-05	-6.926E-04	2.48E-05	-2.086E-03	1.08E-04	-1.279E-03	7.61E-05	1.817E-03	-3.50E-05	2.927E-04	1.48E-05
853.	0.16	.002352	0.94	-0.16	0.11	0.0	1.523E-04	1.61E-05	1.069E-04	9.59E-06	1.392E-04	5.07E-05	3.064E-04	1.70E-05	1.441E-03	2.28E-05	3.671E-04	1.46E-05
850.	0.16	.002348	0.98	-0.30	-0.12	0.0	2.522E-04	4.60E-05	2.056E-04	3.88E-05	4.502E-04	1.83E-04	5.632E-04	1.32E-04	1.345E-03	-4.22E-05	3.767E-04	4.97E-06
853.	0.16	.002348	0.93	-0.93	-1.60	0.0	6.677E-04	1.36E-05	6.315E-04	1.52E-05	1.405E-03	8.43E-05	1.271E-03	2.18E-05	1.120E-03	-7.58E-05	4.600E-04	-5.52E-06
850.	0.16	.002344	0.93	-1.17	-2.49	0.0	9.187E-04	-9.70E-06	8.446E-04	-1.11E-05	1.857E-03	-6.19E-05	1.686E-03	-1.76E-05	1.153E-03	6.19E-05	5.137E-04	6.11E-06
STANDARD DEVIATIONS								3.64E-05		3.04E-05		1.45E-04		5.15E-05		6.14E-05		1.40E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.704E-05		-2.124E-04		-2.615E-04		-2.864E-04		2.892E-05		-1.071E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-3.184E-04		-2.108E-04		-6.010E-04		-4.313E-04		1.145E-04		-1.790E-05	
RESIDUAL							1.781E-04		8.114E-05		1.145E-04		2.923E-04		1.410E-03		3.374E-04	
850.	0.16	.002345	3.91	-0.71	1.53	0.0	3.795E-06	3.37E-05	-8.943E-06	3.11E-05	-3.265E-04	-2.08E-05	1.651E-04	3.33E-05	6.525E-03	-1.39E-04	4.160E-04	-1.23E-05
851.	0.16	.002342	3.92	-0.75	2.27	0.0	-2.398E-04	3.15E-05	-1.753E-04	2.10E-05	-8.155E-04	1.40E-05	-2.277E-04	-3.66E-05	6.560E-03	-9.87E-05	3.954E-04	-6.50E-06
851.	0.16	.002344	3.92	-0.83	3.03	0.0	-5.093E-04	9.56E-06	-3.453E-04	1.29E-05	-1.382E-03	-2.12E-05	-5.297E-04	-6.91E-06	6.613E-03	-2.64E-05	3.720E-04	-6.15E-06
850.	0.16	.002342	3.91	-0.86	3.79	0.0	-7.845E-04	-1.86E-05	-5.145E-04	1.08E-05	-1.953E-03	-5.34E-05	-8.276E-04	2.41E-05	6.714E-03	7.11E-05	3.443E-04	-5.16E-06
851.	0.16	.002344	3.92	-0.83	4.57	0.0	-1.015E-03	4.44E-06	-7.257E-04	-1.72E-05	-2.397E-03	6.71E-05	-1.200E-03	-5.01E-06	6.711E-03	3.78E-05	3.312E-04	1.72E-05
845.	0.15	.002307	3.89	-0.84	0.81	0.0	1.234E-04	-7.52E-05	6.247E-05	-8.31E-05	2.410E-04	1.60E-05	4.277E-04	-1.94E-05	6.536E-03	-5.21E-05	4.499E-04	-2.09E-05
850.	0.15	.002304	3.89	-0.76	0.70	0.0	2.202E-04	-1.65E-05	1.560E-04	-5.98E-06	2.385E-04	-5.44E-05	5.006E-04	6.62E-06	6.691E-03	6.84E-05	4.816E-04	1.40E-05
850.	0.15	.002304	3.90	-0.72	0.31	0.0	3.658E-04	2.38E-06	2.456E-04	8.36E-06	5.563E-04	-8.19E-06	6.809E-04	1.84E-05	6.787E-03	1.55E-04	4.951E-04	1.53E-05
845.	0.15	.002304	3.90	-1.00	-0.92	0.0	7.741E-04	2.09E-05	5.750E-04	1.27E-05	1.603E-03	1.21E-04	1.170E-03	-3.33E-05	6.462E-03	-1.20E-05	5.617E-04	3.26E-06
845.	0.15	.002302	3.90	-1.26	-1.65	0.0	9.891E-04	7.39E-06	7.864E-04	9.46E-06	1.979E-03	-5.97E-05	1.547E-03	2.09E-05	6.335E-03	-4.85E-06	6.149E-04	1.10E-06
STANDARD DEVIATIONS								3.59E-05		3.64E-05		6.53E-05		2.79E-05		9.84E-05		1.43E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.084E-05		-1.767E-04		-1.344E-04		-1.452E-05		4.640E-04		-9.776E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-3.235E-04		-2.263E-04		-7.138E-04		-4.359E-04		2.146E-05		-4.138E-05	
RESIDUAL							4.862E-04		1.806E-04		6.898E-04		7.876E-04		6.559E-03		4.223E-04	
845.	0.15	.002300	7.92	-1.85	2.69	0.0	-1.337E-05	-3.49E-05	-9.464E-06	-3.07E-05	-2.177E-04	-7.99E-05	2.094E-04	-6.16E-05	1.320E-02	4.87E-05	7.188E-04	-2.26E-05
848.	0.15	.002300	7.90	-2.01	3.51	0.0	-2.639E-04	-4.11E-05	-1.624E-04	-1.30E-05	-7.599E-04	-9.64E-05	-1.051E-04	-4.52E-05	1.325E-02	3.67E-06	6.704E-04	-3.31E-05
850.	0.15	.002298	7.91	-2.05	4.40	0.0	-4.942E-04	-4.33E-06	-3.414E-04	-8.76E-06	-1.198E-03	-1.38E-05	-4.578E-04	-3.50E-05	1.322E-02	-1.05E-04	6.549E-04	-7.40E-06
845.	0.15	.002299	7.91	-1.88	5.38	0.0	-7.535E-04	3.29E-05	-5.376E-04	2.29E-05	-1.625E-03	4.88E-05	-7.875E-04	7.50E-06	1.335E-02	6.65E-06	6.349E-04	1.78E-05
845.	0.15	.002299	7.90	-1.98	6.22	0.0	-1.014E-03	2.53E-05	-6.964E-04	8.93E-06	-2.111E-03	8.04E-05	-1.060E-03	7.61E-05	1.344E-02	1.70E-05	6.026E-04	2.45E-05
845.	0.15	.002302	7.91	-1.76	1.87	0.0	2.217E-04	-4.53E-05	1.913E-04	3.52E-07	2.629E-04	-9.94E-05	6.121E-04	1.03E-05	1.317E-02	5.66E-05	7.595E-04	-1.98E-05
850.	0.15	.002299	7.90	-1.70	1.23	0.0	4.571E-04	-3.24E-06	3.121E-04	-1.21E-05	7.639E-04	1.53E-05	8.234E-04	-3.73E-05	1.301E-02	-1.24E-06	8.029E-04	-6.16E-06
850.	0.15	.002299	7.90	-1.68	0.71	0.0	6.271E-04	1.01E-05	4.306E-04	-9.32E-07	1.060E-03	6.91E-06	1.068E-03	-6.83E-07	1.282E-02	-1.56E-04	8.322E-04	-1.03E-06
848.	0.15	.002302	7.91	-1.85	0.09	0.0	8.659E-04	6.09E-05	5.850E-04	3.34E-05	1.476E-03	1.38E-04	1.392E-03	8.95E-05	1.303E-02	5.53E-05	9.085E-04	4.68E-05
STANDARD DEVIATIONS								4.19E-05		2.26E-05		9.47E-05		6.15E-05		9.16E-05		2.94E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.691E-05		1.354E-05		3.782E-04		6.149E-05		-2.663E-04		-2.012E-07	
LATERAL CYCLIC PITCH DERIVATIVES							-3.012E-04		-2.054E-04		-5.678E-04		-3.965E-04		6.746E-05		-4.628E-05	
RESIDUAL							8.012E-04		6.001E-04		2.090E-03		1.452E-03		1.248E-02		8.655E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_o	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
851.	0.16	.002339	8.00	-0.25	2.07	0.0	-8.119E-05	-4.23E-05	-1.021E-05	3.59E-06	-3.031E-04	-5.79E-05	-1.407E-04	6.80E-06	8.194E-03	-1.40E-04	6.920E-04	3.93E-06
850.	0.16	.002336	8.00	-0.32	3.02	0.0	-2.167E-04	-2.97E-06	-1.449E-04	9.39E-06	-5.937E-04	-2.01E-05	-4.130E-04	2.08E-05	8.533E-03	-1.10E-04	6.710E-04	1.36E-05
852.	0.16	.002339	8.00	-0.27	3.90	0.0	-3.817E-04	3.65E-05	-2.764E-04	-1.57E-05	-8.711E-04	7.14E-05	-6.676E-04	-3.32E-05	8.525E-03	2.56E-04	6.569E-04	-2.13E-05
845.	0.16	.002331	8.00	-0.15	4.76	0.0	-6.602E-04	-1.50E-05	-3.385E-04	6.02E-06	-1.372E-03	-2.86E-05	-7.640E-04	1.27E-05	8.397E-03	-1.00E-04	7.434E-04	8.14E-06
852.	0.17	.002330	8.00	-0.17	1.07	0.0	1.637E-04	2.38E-05	1.351E-04	-3.70E-06	1.285E-04	3.51E-05	1.611E-04	-7.08E-06	8.057E-03	5.50E-05	7.247E-04	-4.33E-06
STANDARD DEVIATIONS								4.43E-05		1.42E-05		7.38E-05		2.55E-05		2.42E-04		1.92E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-3.880E-04		2.356E-04		-5.832E-04		6.432E-04		-2.504E-03		4.717E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-2.115E-04		-1.319E-04		-3.874E-04		-2.584E-04		1.539E-04		1.490E-08	
RESIDUAL							3.012E-04		3.166E-04		4.099E-04		5.506E-04		7.382E-03		8.073E-04	
852.	0.15	.002337	12.00	-4.00	5.78	0.0	4.469E-07	2.09E-05	-2.271E-05	1.63E-05	-4.007E-04	1.21E-05	-3.394E-04	1.24E-05	1.947E-02	3.72E-05	1.445E-03	-3.16E-05
848.	0.15	.002336	12.00	-3.62	7.05	0.0	-2.454E-04	-1.71E-05	-1.664E-04	2.26E-05	-7.782E-04	-4.19E-05	-7.199E-04	2.61E-05	1.937E-02	-1.18E-04	1.394E-03	-9.34E-07
849.	0.15	.002337	12.00	-3.67	8.11	0.0	-4.592E-04	-4.61E-06	-3.443E-04	-5.20E-06	-1.097E-03	4.59E-06	-1.082E-03	2.36E-06	1.947E-02	-6.49E-06	1.340E-03	7.61E-07
849.	0.15	.002337	12.00	-4.04	9.08	0.0	-7.340E-04	-1.92E-05	-5.043E-04	-1.63E-06	-1.554E-03	-2.26E-05	-1.406E-03	3.21E-06	1.935E-02	-7.90E-05	1.316E-03	1.77E-05
850.	0.16	.002336	12.00	-3.83	4.83	0.0	2.939E-04	9.05E-05	5.575E-05	-5.02E-05	8.677E-05	1.35E-04	-1.249E-04	-8.22E-05	1.987E-02	4.20E-04	1.517E-03	-5.41E-06
850.	0.15	.002338	12.00	-3.87	3.67	0.0	4.012E-04	-3.64E-05	2.616E-04	-2.31E-06	3.051E-04	-2.26E-05	3.171E-04	-7.88E-06	1.928E-02	-1.64E-04	1.577E-03	-9.29E-06
850.	0.15	.002338	12.00	-3.89	2.69	0.0	6.035E-04	-3.40E-05	4.192E-04	2.07E-05	5.845E-04	-6.40E-05	6.835E-04	4.67E-05	1.528E-02	-1.53E-04	1.667E-03	2.73E-05
STANDARD DEVIATIONS								5.43E-05		3.06E-05		7.93E-05		4.96E-05		2.49E-04		2.33E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.526E-04		7.351E-05		2.746E-04		3.519E-05		1.371E-04		-3.325E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.082E-04		-1.354E-04		-3.349E-04		-3.194E-04		2.205E-06		-5.425E-05	
RESIDUAL							1.793E-03		1.060E-03		2.621E-03		1.634E-03		1.997E-02		1.657E-03	
849.	0.15	.002333	0.90	-0.31	0.43	0.0	1.152E-06	-1.40E-06	4.955E-06	4.74E-06	-1.364E-04	-2.75E-06	1.306E-04	7.77E-06	1.659E-03	4.30E-06	3.751E-04	7.42E-06
850.	0.15	.002337	1.92	-0.16	0.44	0.0	1.887E-04	-1.96E-05	1.563E-05	-1.64E-05	1.778E-04	-5.88E-05	1.104E-04	-5.51E-06	3.482E-03	-9.09E-06	3.779E-04	6.60E-06
850.	0.15	.002333	2.93	-0.17	0.45	0.0	3.462E-04	1.74E-05	5.058E-05	-3.72E-06	4.716E-04	4.84E-05	1.283E-04	-2.04E-05	5.260E-03	-8.87E-06	3.878E-04	-2.77E-05
850.	0.15	.002336	4.94	-0.07	0.50	0.0	6.547E-04	7.18E-06	1.055E-04	1.53E-05	9.898E-04	2.38E-05	1.671E-04	1.49E-05	8.798E-03	1.10E-05	4.579E-04	8.48E-06
850.	0.15	.002337	6.98	-0.10	0.49	0.0	8.630E-04	-6.89E-06	1.502E-04	-5.30E-06	1.276E-03	-2.05E-05	2.618E-04	-1.32E-06	1.245E-02	-3.20E-06	5.738E-04	2.78E-06
850.	0.15	.002336	-0.09	-0.21	0.32	0.0	-1.212E-04	3.06E-06	2.559E-05	5.38E-06	-3.278E-04	9.94E-06	1.793E-04	4.74E-06	1.189E-04	3.61E-06	3.821E-04	2.25E-06
STANDARD DEVIATIONS								2.00E-05		1.73E-05		5.87E-05		1.54E-05		1.28E-05		2.18E-05
COLLECTIVE PITCH DERIVATIVES							1.184E-04		2.814E-05		1.826E-04		4.443E-05		1.788E-03		5.149E-05	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							5.396E-04		3.177E-05		1.163E-03		-3.046E-04		2.326E-04		-2.905E-04	
LATERAL CYCLIC PITCH DERIVATIVES							5.855E-04		-4.108E-04		1.291E-03		-1.167E-03		-2.017E-03		-8.547E-04	
RESIDUAL							-1.892E-04		1.631E-04		-4.938E-04		4.932E-04		9.847E-04		6.008E-04	
851.	0.15	.002346	3.93	-0.56	1.38	0.0	-1.804E-06	-9.44E-07	-8.979E-06	-4.92E-06	-6.755E-05	1.91E-06	2.151E-04	-2.08E-05	6.724E-03	5.30E-05	4.582E-04	-4.78E-06
854.	0.15	.002346	4.92	-0.56	1.44	0.0	1.382E-04	-2.73E-06	2.080E-05	6.44E-06	1.616E-04	-1.13E-05	2.866E-04	3.49E-05	8.384E-03	-2.15E-05	5.030E-04	3.11E-05
856.	0.15	.002346	5.93	-0.67	1.50	0.0	2.618E-04	6.01E-08	3.404E-05	-1.18E-06	3.756E-04	1.10E-05	2.679E-04	-2.01E-05	1.002E-02	-4.70E-05	5.531E-04	-3.03E-05
852.	0.15	.002346	7.93	-0.77	1.49	0.0	5.375E-04	1.19E-05	7.149E-05	-4.98E-06	7.462E-04	1.50E-06	3.348E-04	-7.50E-06	1.352E-02	7.21E-05	6.909E-04	-5.60E-06
856.	0.15	.002346	9.91	-1.02	1.67	0.0	7.464E-04	-5.63E-06	1.208E-04	3.05E-06	1.111E-03	-3.40E-06	4.303E-04	8.57E-06	1.664E-02	-2.60E-05	9.739E-04	1.00E-05
850.	0.15	.002345	2.93	-0.52	1.19	0.0	-1.411E-04	-6.05E-06	-1.144E-05	9.83E-06	-3.512E-04	-2.30E-06	2.242E-04	7.78E-06	4.889E-03	-6.36E-05	4.272E-04	1.08E-05
851.	0.15	.002344	1.95	-0.53	1.21	0.0	-2.821E-04	-3.26E-06	-5.268E-05	-1.28E-05	-5.630E-04	5.32E-06	1.926E-04	-1.01E-05	3.250E-03	1.65E-05	4.051E-04	-2.18E-05
852.	0.15	.002345	-0.02	-0.51	1.19	0.0	-5.508E-04	6.14E-06	-7.354E-05	4.53E-06	-1.010E-03	-2.96E-06	1.742E-04	7.16E-06	-1.667E-04	1.40E-05	4.096E-04	1.03E-05
STANDARD DEVIATIONS								6.17E-06		9.77E-06		8.78E-06		2.45E-05		6.30E-05		2.62E-05
COLLECTIVE PITCH DERIVATIVES							1.438E-04		1.920E-05		2.246E-04		1.604E-05		1.744E-03		2.205E-06	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.312E-04		-2.444E-05		5.945E-04		-2.100E-04		9.759E-04		-1.046E-03	
LATERAL CYCLIC PITCH DERIVATIVES							-1.479E-06		-1.567E-05		4.115E-04		-2.694E-05		6.485E-05		7.689E-06	
RESIDUAL							-4.347E-04		-7.146E-05		-1.189E-03		9.274E-05		2.747E-04		-1.413E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
852.	0.15	.002345	7.93	-1.76	2.73	0.0	6.357E-06	4.03E-06	-3.443E-05	-3.97E-06	-2.812E-04	9.33E-06	1.157E-04	-6.41E-06	1.302E-02	-1.31E-05	7.153E-04	-3.41E-07
849.	0.15	.002345	7.92	-1.70	2.74	0.0	-1.617E-07	-1.49E-06	-2.556E-05	1.20E-05	-2.916E-04	-1.47E-05	1.330E-04	9.42E-06	1.314E-02	6.68E-05	7.179E-04	-2.70E-05
849.	0.15	.002343	8.91	-1.62	2.76	0.0	1.664E-04	1.60E-05	-2.748E-05	1.18E-05	-1.178E-05	-1.74E-05	1.457E-04	7.68E-06	1.494E-02	-1.11E-05	8.111E-04	-3.19E-05
849.	0.15	.002344	9.89	-1.76	2.78	0.0	2.907E-04	-6.24E-06	-3.600E-05	-2.02E-05	2.572E-04	2.88E-05	1.350E-04	-9.78E-06	1.668E-02	4.08E-05	9.250E-04	6.10E-05
850.	0.15	.002339	13.95	-1.87	3.42	0.0	8.175E-04	5.57E-07	-5.294E-05	-7.11E-06	1.167E-03	6.02E-06	1.351E-04	-1.92E-06	2.279E-02	1.74E-05	1.995E-03	2.58E-05
849.	0.15	.002342	6.93	-1.45	2.69	0.0	-1.635E-04	-2.29E-05	-4.446E-05	2.42E-05	-5.236E-04	-5.54E-05	1.333E-04	9.76E-06	1.153E-02	-2.03E-06	6.347E-04	-7.15E-05
851.	0.15	.002343	5.90	-1.33	2.65	0.0	-2.852E-04	5.36E-06	-7.486E-05	1.29E-05	-6.823E-04	2.10E-05	1.123E-04	-5.37E-06	9.660E-03	5.83E-05	5.692E-04	-7.39E-05
853.	0.14	.002341	3.92	-1.22	2.49	0.0	-5.632E-04	5.22E-06	-1.287E-04	-3.02E-05	-1.153E-03	2.22E-05	1.043E-04	-5.25E-06	6.523E-03	2.81E-06	4.626E-04	1.16E-04
STANDARD DEVIATIONS								1.50E-05		2.46E-05		3.70E-05		1.09E-05		5.03E-05		8.69E-05
COLLECTIVE PITCH DERIVATIVES							1.533E-04		1.380E-05		2.673E-04		1.344E-05		1.875E-03		4.029E-05	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							9.317E-06		-1.053E-04		2.551E-04		3.476E-05		8.678E-04		3.017E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-1.591E-04		-1.337E-04		-1.943E-04		-9.155E-05		-2.161E-03		1.525E-03	
RESIDUAL							-7.613E-04		6.366E-05		-1.428E-03		3.273E-04		5.615E-03		-3.242E-03	
849.	0.14	.002327	1.00	-0.22	0.80	0.06	1.192E-05	-1.71E-06	-2.862E-05	-8.76E-06	-5.899E-05	3.54E-06	-1.279E-04	-1.51E-05	2.145E-03	3.79E-05	4.539E-04	1.12E-05
851.	0.14	.002327	1.00	-0.16	0.76	1.15	3.024E-05	-7.51E-06	-4.488E-06	-4.11E-06	4.099E-06	-6.49E-06	-8.282E-05	-8.93E-06	2.588E-03	4.49E-05	4.471E-04	3.05E-06
850.	0.14	.002328	1.00	-0.18	0.79	3.12	8.538E-05	1.04E-05	2.131E-05	-8.30E-06	8.783E-05	1.83E-05	-3.185E-05	-1.03E-05	3.291E-03	-3.68E-05	4.410E-04	8.09E-06
845.	0.14	.002327	1.00	-0.17	0.85	5.25	1.153E-04	-3.31E-06	5.288E-05	1.10E-05	1.306E-04	-1.11E-05	1.057E-05	1.76E-05	4.103E-03	-2.95E-05	4.186E-04	-1.87E-05
848.	0.15	.002327	1.00	-0.18	0.76	-0.87	-4.864E-06	-2.17E-06	-2.722E-05	4.92E-06	-8.120E-05	-7.30E-06	-1.267E-04	5.26E-06	1.625E-03	8.76E-05	4.640E-04	1.36E-05
845.	0.15	.002326	1.00	-0.19	0.73	-2.82	-3.538E-05	6.19E-06	-5.543E-05	1.42E-06	-1.383E-04	7.68E-06	-1.684E-04	6.00E-06	8.671E-04	-1.05E-04	4.361E-04	-1.85E-05
850.	0.14	.002326	1.00	-0.26	0.68	-4.88	-9.141E-05	-1.92E-06	-3.638E-05	3.77E-06	-2.472E-04	-4.90E-06	-1.247E-04	5.64E-06	2.680E-04	2.87E-07	4.184E-04	-5.36E-06
STANDARD DEVIATIONS								8.66E-06		1.04E-05		1.47E-05		1.65E-05		9.00E-05		1.92E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							8.814E-05		-4.225E-04		4.084E-04		-8.585E-04		-1.050E-03		3.977E-04	
LATERAL CYCLIC PITCH DERIVATIVES							5.013E-05		-5.673E-04		-1.775E-04		-1.222E-03		-1.302E-03		3.624E-04	
ROTOR PITCH DERIVATIVES							1.896E-05		2.108E-05		3.733E-05		3.969E-05		4.120E-04		-8.050E-06	
RESIDUAL							-8.162E-06		3.386E-04		1.667E-04		6.710E-04		2.890E-03		2.415E-04	
845.	0.15	.002342	4.00	-0.69	1.39	0.07	1.371E-05	1.37E-05	-3.069E-05	3.14E-06	-2.722E-04	2.53E-05	2.971E-05	6.74E-06	7.394E-03	-2.39E-05	4.268E-04	8.04E-06
848.	0.15	.002339	4.00	-0.65	1.40	1.17	1.741E-05	-1.34E-05	-2.955E-05	-3.15E-06	-2.715E-04	-2.94E-05	2.751E-05	-2.90E-06	7.940E-03	4.05E-05	4.174E-04	-8.96E-06
851.	0.15	.002339	4.00	-0.68	1.43	3.11	3.727E-05	7.80E-06	-1.529E-05	-2.91E-06	-2.191E-04	2.44E-05	4.842E-05	-5.12E-06	8.872E-03	-9.26E-05	3.995E-04	1.03E-05
851.	0.15	.002342	4.00	-0.62	1.37	5.27	6.013E-05	-8.18E-06	2.619E-05	3.25E-06	-1.925E-04	-2.18E-05	1.183E-04	2.80E-06	1.007E-02	7.26E-05	3.608E-04	-1.09E-05
850.	0.15	.002341	4.00	-0.63	1.18	-0.89	9.067E-06	8.21E-06	2.961E-06	-4.17E-06	-2.719E-04	1.88E-05	1.118E-04	-6.27E-07	6.812E-03	-6.89E-05	4.190E-04	1.08E-05
849.	0.15	.002341	4.00	-0.66	1.22	-2.66	-2.900E-05	1.33E-07	-1.647E-05	5.16E-06	-3.435E-04	3.44E-06	6.202E-05	-5.64E-07	5.930E-03	1.08E-05	4.224E-04	-4.37E-06
849.	0.15	.002339	4.00	-0.75	1.22	-4.96	-9.729E-05	-8.29E-06	-4.159E-05	-1.29E-06	-4.749E-04	-1.98E-05	3.722E-05	-3.74E-07	5.030E-03	3.58E-05	4.082E-04	-6.49E-06
STANDARD DEVIATIONS								1.45E-05		5.31E-06		3.33E-05		5.44E-06		8.60E-05		1.35E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							5.249E-04		-1.746E-05		9.324E-04		-9.194E-05		-1.952E-03		4.740E-04	
LATERAL CYCLIC PITCH DERIVATIVES							1.241E-04		-2.476E-04		1.913E-04		-5.324E-04		-4.168E-04		2.599E-04	
ROTOR PITCH DERIVATIVES							7.031E-06		1.005E-05		1.340E-05		1.660E-05		5.192E-04		-1.392E-05	
RESIDUAL							1.882E-04		2.978E-04		7.778E-05		6.989E-04		6.614E-03		3.849E-04	
848.	0.15	.002305	8.00	-2.69	3.86	0.11	-6.584E-06	8.25E-06	4.002E-06	1.22E-05	-3.714E-04	1.21E-05	-2.467E-04	3.03E-05	1.347E-02	1.03E-04	7.634E-04	2.57E-05
850.	0.15	.002305	8.00	-2.66	3.94	1.21	2.140E-05	1.01E-05	3.037E-05	2.37E-05	-3.333E-04	2.57E-05	-2.226E-04	4.24E-05	1.398E-02	2.21E-04	7.643E-04	2.58E-05
849.	0.15	.002306	8.00	-2.74	3.89	3.13	2.440E-05	-7.86E-06	1.682E-05	-6.82E-06	-3.419E-04	-1.60E-05	-2.288E-04	-6.84E-06	1.502E-02	1.41E-04	7.327E-04	1.12E-05
848.	0.16	.002307	8.00	-2.89	3.91	5.30	5.302E-05	-1.22E-05	3.382E-05	-8.78E-06	-3.016E-04	-1.81E-05	-2.071E-04	-1.91E-05	1.636E-02	2.74E-04	7.186E-04	3.57E-06
848.	0.16	.002308	8.00	-2.58	3.97	-0.86	-1.102E-05	4.51E-06	-2.987E-05	-1.72E-05	-3.920E-04	4.40E-06	-3.398E-04	-3.28E-05	1.279E-02	1.55E-04	7.578E-04	4.61E-06
850.	0.15	.002311	8.00	-2.57	3.63	-2.89	-5.177E-05	3.32E-05	-3.950E-05	3.01E-06	-3.980E-04	5.35E-05	-2.981E-04	4.85E-06	1.209E-02	8.02E-05	7.512E-04	2.23E-05
851.	0.15	.002312	8.00	-2.47	3.65	-5.04	-1.484E-04	-3.58E-05	-6.820E-05	-6.28E-06	-5.441E-04	-5.37E-05	-3.571E-04	-1.11E-05	1.112E-02	3.14E-04	7.434E-04	-1.62E-07
STANDARD DEVIATIONS								3.06E-05		1.98E-05		4.88E-05		3.81E-05		3.10E-04		2.57E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.553E-06		3.331E-05		-8.523E-06		4.834E-05		-1.297E-03		-4.387E-05	
LATERAL CYCLIC PITCH DERIVATIVES							1.180E-04		2.384E-05		5.162E-05		-1.323E-04		-1.101E-03		1.132E-04	
ROTOR PITCH DERIVATIVES							1.425E-05		1.085E-05		1.836E-05		2.057E-05		4.654E-04		-7.391E-06	
RESIDUAL							-4.758E-04		-1.169E-05		-6.075E-04		3.605E-04		1.407E-02		1.841E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_o	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
848.	0.15	.002332	12.00	-4.36	5.58	0.11	-1.035E-05	1.46E-05	1.684E-05	2.70E-05	-3.934E-04	7.17E-05	-2.455E-04	3.70E-05	1.963E-02	-1.80E-04	1.457E-03	3.00E-05
850.	0.15	.002332	12.00	-4.38	5.80	1.21	3.494E-05	3.39E-05	-1.317E-05	1.85E-05	-3.808E-04	7.81E-05	-3.224E-04	2.67E-05	2.018E-02	-2.79E-04	1.483E-03	2.55E-05
850.	0.15	.002333	12.00	-4.07	6.06	3.15	6.348E-05	-3.89E-06	1.917E-05	-1.09E-05	-3.622E-04	-6.28E-06	-2.673E-04	-1.41E-05	2.128E-02	-2.37E-04	1.518E-03	-1.86E-05
850.	0.15	.002334	12.00	-4.55	5.70	5.28	6.902E-05	-3.53E-05	5.050E-05	-1.69E-05	-3.780E-04	-6.08E-05	-1.861E-04	-1.79E-05	2.224E-02	-2.02E-04	1.512E-03	-4.30E-05
851.	0.15	.002333	12.00	-4.27	5.62	-0.88	-3.207E-05	1.54E-05	-1.446E-05	1.26E-05	-4.583E-04	3.28E-05	-2.865E-04	2.64E-05	1.507E-02	-2.64E-04	1.412E-03	4.68E-06
852.	0.16	.002333	12.00	-4.41	5.44	-2.86	-8.083E-05	2.56E-05	-8.714E-05	-1.63E-05	-5.426E-04	2.83E-05	-4.012E-04	-2.42E-05	1.793E-02	-3.41E-04	1.330E-03	-1.15E-05
845.	0.16	.002335	12.00	-4.27	5.54	-4.97	-2.065E-04	-4.88E-05	-1.338E-04	-1.26E-05	-7.122E-04	-7.22E-05	-4.842E-04	-1.20E-05	1.712E-02	-1.46E-04	1.252E-03	-4.37E-05
STANDARD DEVIATIONS								4.44E-05		2.62E-05		8.57E-05		3.67E-05		3.72E-04		4.40E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							5.434E-05		2.087E-04		2.098E-04		4.308E-04		-6.104E-05		7.629E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.441E-05		-2.228E-04		-1.560E-04		-5.260E-04		4.730E-04		8.583E-06	
ROTOR PITCH DERIVATIVES							2.728E-05		2.765E-05		3.972E-05		4.980E-05		4.559E-04		2.730E-05	
RESIDUAL							2.897E-04		2.141E-03		1.317E-03		4.528E-03		1.685E-02		1.709E-03	
851.	0.20	.002331	0.89	-0.19	0.44	0.0	1.056E-05	-3.72E-05	-1.288E-05	4.86E-07	-1.152E-04	-4.20E-05	1.372E-04	5.92E-05	1.544E-03	-5.54E-05	3.550E-04	-2.25E-06
851.	0.20	.002331	0.89	0.18	0.42	0.0	1.724E-04	9.93E-06	-6.911E-05	1.18E-05	1.535E-04	4.98E-05	-1.213E-04	-2.67E-05	2.289E-03	2.82E-05	3.406E-04	6.45E-06
850.	0.20	.002331	0.89	0.51	0.45	0.0	3.158E-04	6.22E-05	-1.557E-04	-1.39E-05	2.989E-04	5.56E-05	-3.572E-04	-9.44E-05	2.555E-03	5.56E-05	3.062E-04	-6.06E-06
845.	0.20	.002332	0.89	1.11	0.42	0.0	4.686E-04	2.76E-05	-2.742E-04	-1.82E-05	5.527E-04	2.04E-05	-6.233E-04	-7.85E-05	2.575E-03	5.20E-05	2.641E-04	-1.04E-05
850.	0.20	.002331	0.89	1.95	0.43	0.0	6.543E-04	-3.68E-05	-4.017E-04	1.22E-05	8.854E-04	-3.19E-05	-8.810E-04	6.96E-05	3.470E-03	-4.92E-05	2.259E-04	5.15E-06
845.	0.20	.002332	0.89	-0.74	0.66	0.0	-2.181E-04	-3.85E-05	6.109E-05	9.89E-06	-5.072E-04	-7.95E-05	3.847E-04	1.00E-04	1.546E-03	-5.06E-05	3.964E-04	8.71E-06
850.	0.20	.002332	0.89	-1.43	0.96	0.0	-4.647E-04	1.02E-06	1.757E-04	4.51E-06	-8.768E-04	-2.66E-06	5.658E-04	2.82E-05	1.082E-03	-1.32E-05	4.323E-04	7.14E-06
845.	0.20	.002332	0.89	-2.26	1.08	0.0	-7.353E-04	1.18E-05	3.138E-04	-6.76E-06	-1.279E-03	3.03E-05	8.478E-04	-5.76E-05	5.290E-04	2.83E-05	4.669E-04	-8.72E-06
STANDARD DEVIATIONS								4.27E-05		1.40E-05		5.66E-05		8.75E-05		5.67E-05		9.18E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.994E-04		-1.874E-04		4.608E-04		-4.816E-04		7.101E-04		-6.387E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.672E-04		-8.495E-05		-4.310E-04		-2.656E-04		-3.713E-05		-2.202E-05	
RESIDUAL							2.203E-04		-1.138E-05		2.009E-04		1.038E-04		2.148E-03		3.549E-04	
851.	0.20	.002338	3.92	-0.98	1.26	0.0	3.615E-05	-1.79E-05	6.702E-07	2.67E-05	-1.760E-04	-1.10E-05	2.544E-04	1.31E-04	7.295E-03	-8.41E-05	3.962E-04	7.16E-06
853.	0.20	.002338	3.93	-0.24	1.10	0.0	2.843E-04	5.43E-06	-1.146E-04	1.65E-05	1.782E-04	-1.07E-05	-1.150E-04	2.14E-05	7.637E-03	-9.46E-06	3.436E-04	7.24E-06
850.	0.20	.002338	3.92	0.23	0.94	0.0	4.283E-04	-1.74E-06	-2.043E-04	-1.65E-05	4.106E-04	-7.11E-06	-3.262E-04	-6.74E-05	8.159E-03	7.88E-06	2.951E-04	-7.36E-06
850.	0.20	.002338	3.93	1.10	1.05	0.0	6.974E-04	3.63E-05	-3.813E-04	-2.12E-05	8.668E-04	4.39E-05	-8.780E-04	-1.16E-04	8.777E-03	1.02E-04	2.321E-04	-9.29E-06
848.	0.20	.002338	3.93	-1.84	1.48	0.0	-2.424E-04	-2.51E-05	8.793E-05	-3.74E-06	-5.829E-04	-1.96E-06	4.931E-04	8.94E-05	6.829E-03	-4.47E-07	4.581E-04	7.20E-06
850.	0.20	.002339	3.93	-2.55	1.72	0.0	-4.819E-04	-4.23E-05	2.002E-04	2.28E-05	-9.890E-04	-6.49E-05	6.898E-04	9.96E-05	6.237E-03	-1.36E-04	5.091E-04	7.37E-06
850.	0.15	.002340	3.93	-4.42	1.94	0.0	-9.387E-04	4.92E-05	4.464E-04	-2.46E-05	-1.759E-03	5.19E-05	1.202E-03	-1.57E-04	5.335E-03	1.26E-04	6.225E-04	-1.18E-05
STANDARD DEVIATIONS								4.10E-05		2.67E-05		4.78E-05		1.40E-04		1.14E-04		1.11E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.799E-04		-1.769E-04		4.704E-04		-4.919E-04		6.129E-04		-7.059E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.174E-04		-1.628E-04		-4.387E-05		-6.664E-04		-9.632E-05		3.934E-06	
RESIDUAL							4.762E-04		5.726E-06		3.512E-04		4.803E-04		8.101E-03		3.150E-04	
845.	0.20	.002334	7.31	-3.16	2.64	0.0	1.462E-05	8.15E-05	6.647E-06	-1.47E-05	-2.161E-04	9.73E-05	2.403E-04	-5.64E-05	1.392E-02	2.86E-04	6.708E-04	-1.43E-05
845.	0.20	.002335	7.31	-2.11	2.64	0.0	1.762E-04	6.66E-06	-1.334E-04	-2.79E-07	7.517E-05	-8.09E-06	-5.435E-05	-5.50E-06	1.449E-02	1.52E-04	5.687E-04	-1.81E-05
852.	0.20	.002336	7.30	-1.02	2.57	0.0	4.439E-04	2.26E-05	-2.922E-04	2.78E-06	5.274E-04	2.67E-05	-3.742E-04	1.49E-05	1.519E-02	1.26E-04	4.774E-04	-6.61E-06
850.	0.20	.002336	7.31	-0.10	2.44	0.0	6.322E-04	-1.38E-05	-4.305E-04	6.52E-06	8.720E-04	2.99E-06	-6.408E-04	2.65E-05	1.554E-02	-1.58E-04	4.021E-04	8.19E-06
850.	0.20	.002336	7.31	0.50	2.23	0.0	7.651E-04	-4.18E-05	-5.473E-04	-1.27E-05	1.086E-03	-3.85E-05	-8.571E-04	-3.43E-05	1.601E-02	-9.79E-05	3.341E-04	1.65E-06
848.	0.20	.002336	7.31	-3.65	2.76	0.0	-1.838E-04	8.56E-06	1.212E-04	2.23E-05	-5.539E-04	-3.82E-05	4.765E-04	4.31E-05	1.307E-02	-2.20E-04	7.591E-04	2.50E-05
845.	0.20	.002336	7.31	-4.61	2.82	0.0	-4.297E-04	-1.64E-05	2.516E-04	1.64E-05	-9.203E-04	-3.76E-05	7.833E-04	4.85E-05	1.253E-02	-1.20E-04	8.396E-04	1.51E-05
845.	0.20	.002337	7.31	-5.56	2.89	0.0	-6.744E-04	-3.78E-05	3.724E-04	-1.20E-05	-1.254E-03	-1.88E-06	1.020E-03	-1.38E-05	1.199E-02	-2.02E-05	9.022E-04	-1.33E-05
845.	0.20	.002338	7.32	-6.35	3.41	0.0	-8.903E-04	-5.35E-06	5.172E-04	-8.31E-06	-1.630E-03	-1.96E-06	1.171E-03	-2.39E-05	1.142E-02	-2.27E-05	1.003E-03	-1.14E-06
STANDARD DEVIATIONS								4.28E-05		1.53E-05		4.94E-05		4.14E-05		1.91E-04		1.67E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.239E-04		-1.463E-04		3.757E-04		-3.272E-04		6.701E-04		-9.307E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.294E-04		4.855E-05		-1.507E-04		-1.894E-04		-6.866E-05		2.849E-05	
RESIDUAL							9.833E-04		-5.696E-04		1.273E-03		-2.379E-04		1.593E-02		3.154E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
845.	0.20	.002332	0.89	-0.16	0.46	0.0	2.125E-05	6.50E-06	-1.642E-05	-3.42E-05	-1.131E-04	-4.09E-05	1.211E-04	-4.16E-05	2.054E-03	9.22E-05	3.646E-04	-4.06E-06
845.	0.20	.002335	0.90	-0.08	0.96	0.0	-2.183E-04	-5.48E-05	-1.884E-04	-3.70E-05	-6.074E-04	-1.52E-04	-1.509E-04	-4.42E-05	2.069E-03	8.28E-05	3.303E-04	-1.64E-05
845.	0.20	.002335	0.90	-0.09	1.74	0.0	-4.485E-04	-3.11E-05	-3.816E-04	-3.17E-05	-1.072E-03	-1.05E-04	-4.751E-04	-6.61E-05	2.025E-03	1.47E-05	3.254E-04	-3.77E-06
845.	0.20	.002335	0.89	-0.07	3.09	0.0	-8.390E-04	2.55E-05	-6.867E-04	3.24E-05	-1.786E-03	1.03E-04	-9.231E-04	5.45E-05	2.015E-03	-4.16E-05	2.995E-04	6.73E-06
853.	0.15	.002336	0.89	-0.16	0.11	0.0	1.462E-04	1.79E-05	1.288E-04	1.99E-05	2.044E-04	4.54E-05	3.240E-04	2.17E-05	1.663E-03	-8.80E-05	3.854E-04	8.20E-06
845.	0.15	.002337	0.89	-0.20	-0.18	0.0	2.761E-04	4.47E-05	2.665E-04	6.15E-05	5.696E-04	1.90E-04	5.460E-04	9.14E-05	1.660E-03	-7.62E-05	4.021E-04	1.28E-05
848.	0.20	.002338	0.89	-0.58	-1.40	0.0	6.732E-04	-1.31E-05	6.869E-04	-1.09E-05	1.368E-03	-4.11E-05	1.243E-03	-1.57E-05	1.673E-03	1.62E-05	4.614E-04	-3.47E-06
STANDARD DEVIATIONS								4.30E-05		4.71E-05		1.47E-04		7.09E-05		8.82E-05		1.21E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.396E-04		-4.539E-04		-5.663E-04		-8.256E-04		1.077E-04		-1.208E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-3.304E-04		-2.641E-04		-6.702E-04		-4.044E-04		3.241E-05		-2.463E-05	
RESIDUAL							1.432E-04		6.565E-05		1.436E-04		2.151E-04		1.564E-03		3.605E-04	
852.	0.20	.002336	3.31	-1.22	1.51	0.0	-1.464E-05	-1.57E-06	-4.584E-06	-2.43E-05	-2.178E-04	-3.09E-05	2.275E-04	-3.52E-05	6.600E-03	-7.66E-05	4.224E-04	-7.36E-06
851.	0.20	.002337	3.31	-1.20	2.26	0.0	-2.540E-04	3.02E-06	-1.787E-04	3.13E-06	-7.334E-04	-3.13E-05	-1.120E-04	-8.94E-06	6.640E-03	-1.79E-05	3.985E-04	-2.76E-07
850.	0.20	.002336	3.30	-1.11	3.00	0.0	-4.966E-04	1.76E-06	-3.826E-04	7.10E-06	-1.211E-03	3.09E-06	-4.653E-04	1.28E-05	6.573E-03	7.31E-05	3.626E-04	2.96E-07
850.	0.20	.002337	3.30	-1.22	3.80	0.0	-7.513E-04	1.68E-06	-5.701E-04	1.33E-05	-1.712E-03	3.22E-05	-8.042E-04	2.87E-05	6.751E-03	-1.34E-05	3.478E-04	6.69E-06
845.	0.20	.002336	3.30	-1.20	0.80	0.0	1.984E-04	-1.75E-05	1.591E-04	-4.42E-05	2.806E-04	-1.23E-05	5.176E-04	-7.90E-05	6.547E-03	1.65E-05	4.382E-04	-1.71E-05
845.	0.20	.002335	3.30	-1.07	0.49	0.0	3.142E-04	6.21E-06	2.826E-04	2.04E-05	4.996E-04	1.96E-05	7.451E-04	3.79E-05	7.032E-03	-2.57E-05	4.644E-04	9.00E-06
845.	0.20	.002335	3.30	-1.33	-0.69	0.0	7.086E-04	6.78E-06	6.415E-04	2.46E-05	1.343E-03	1.98E-05	1.388E-03	4.36E-05	6.915E-03	3.62E-05	5.340E-04	8.49E-06
STANDARD DEVIATIONS								1.01E-05		3.08E-05		3.13E-05		5.45E-05		5.51E-05		1.17E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-4.822E-05		-1.641E-04		-1.531E-04		-2.706E-04		8.739E-04		-9.055E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-3.225E-04		-2.631E-04		-6.788E-04		-4.779E-04		-4.670E-05		-3.882E-05	
RESIDUAL							4.150E-04		2.165E-04		6.500E-04		6.533E-04		8.013E-03		3.779E-04	
850.	0.20	.002338	7.30	-2.66	2.68	0.0	-1.086E-05	2.49E-06	7.063E-06	9.26E-06	-2.666E-04	-9.57E-07	2.453E-04	1.98E-05	1.354E-02	-7.75E-05	6.621E-04	5.52E-06
845.	0.20	.002336	7.31	-2.47	3.63	0.0	-2.195E-04	2.48E-05	-2.118E-04	3.83E-06	-6.722E-04	1.03E-05	-1.638E-04	-3.43E-05	1.366E-02	1.32E-04	6.133E-04	-1.58E-05
849.	0.20	.002336	7.31	-2.52	4.36	0.0	-4.680E-04	6.93E-06	-4.039E-04	-1.16E-05	-1.133E-03	5.71E-06	-4.747E-04	3.73E-06	1.368E-02	1.55E-04	5.690E-04	-1.93E-06
849.	0.20	.002335	7.31	-2.39	5.33	0.0	-7.411E-04	-1.02E-05	-6.050E-04	7.35E-06	-1.603E-03	1.15E-05	-8.588E-04	1.12E-05	1.341E-02	-3.66E-05	5.583E-04	2.84E-05
849.	0.20	.002334	7.30	-2.49	1.89	0.0	2.313E-04	-3.37E-05	1.879E-04	-7.24E-06	2.390E-04	-6.37E-05	6.346E-04	-1.02E-05	1.339E-02	-2.03E-04	7.085E-04	-3.18E-05
849.	0.20	.002336	7.30	-2.52	1.13	0.0	4.564E-04	-2.73E-05	3.545E-04	-1.95E-05	7.150E-04	-7.77E-06	9.533E-04	-2.41E-05	1.353E-02	-9.58E-05	7.678E-04	-1.80E-05
849.	0.20	.002337	7.30	-2.47	0.74	0.0	6.442E-04	3.20E-05	4.814E-04	1.20E-05	9.951E-04	1.48E-05	1.227E-03	5.55E-05	1.364E-02	2.43E-05	8.245E-04	3.66E-06
850.	0.20	.002338	7.30	-2.55	-0.10	0.0	8.439E-04	5.41E-06	6.687E-04	5.87E-06	1.436E-03	3.01E-05	1.496E-03	-2.11E-05	1.388E-02	2.07E-04	8.989E-04	3.78E-05
STANDARD DEVIATIONS								2.73E-05		1.34E-05		3.32E-05		3.44E-05		1.69E-04		2.78E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.585E-04		5.273E-05		6.716E-04		3.702E-04		-3.449E-04		1.882E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-2.968E-04		-2.371E-04		-5.765E-04		-4.506E-04		-3.106E-05		-6.668E-05	
RESIDUAL							1.470E-03		7.743E-04		3.066E-03		2.419E-03		1.279E-02		1.335E-03	
851.	0.20	.002334	0.91	-0.22	0.54	0.0	2.062E-05	-2.02E-05	-2.673E-05	-9.43E-06	-1.317E-04	-4.03E-05	7.521E-05	9.40E-07	1.578E-03	-6.70E-05	3.634E-04	1.32E-05
850.	0.20	.002335	1.92	-0.20	0.53	0.0	2.068E-04	-4.00E-08	-1.317E-05	5.53E-07	1.978E-04	2.89E-06	8.205E-05	-3.39E-08	3.527E-03	-1.56E-05	3.639E-04	-6.39E-07
851.	0.20	.002332	2.93	-0.14	0.57	0.0	4.155E-04	3.15E-05	5.614E-06	1.62E-05	5.509E-04	7.07E-05	3.463E-05	-1.59E-06	6.063E-03	5.36E-05	3.434E-04	-2.23E-05
851.	0.20	.002332	4.95	-0.00	0.60	0.0	7.365E-04	-1.15E-05	-3.856E-06	-5.17E-06	1.077E-03	-2.15E-05	5.343E-06	5.25E-07	9.943E-03	-4.78E-05	3.705E-04	7.38E-06
848.	0.20	.002332	6.98	-0.13	0.63	0.0	1.009E-03	-4.57E-06	-1.253E-05	-1.97E-06	1.495E-03	-7.40E-06	-4.991E-05	2.05E-07	1.383E-02	-3.29E-05	4.480E-04	2.97E-06
STANDARD DEVIATIONS								3.55E-05		1.96E-05		8.45E-05		1.94E-06		1.05E-04		2.71E-05
COLLECTIVE PITCH DERIVATIVES							1.570E-04		1.242E-06		2.629E-04		-4.356E-06		1.899E-03		1.960E-05	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.843E-04		5.229E-05		8.462E-04		1.182E-04		4.530E-04		-3.200E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-1.688E-04		-1.062E-04		-9.155E-04		-1.290E-03		2.545E-03		4.768E-05	
RESIDUAL							7.439E-05		5.946E-05		3.529E-04		8.044E-04		-1.175E-03		2.365E-04	
850.	0.20	.002373	4.33	-1.43	1.48	0.0	1.774E-04	2.42E-07	-1.363E-05	-2.55E-08	1.111E-04	2.10E-06	1.448E-04	1.42E-06	9.750E-03	6.66E-05	4.444E-04	7.07E-06
847.	0.20	.002373	5.31	-1.32	1.68	0.0	3.099E-04	-1.38E-05	-1.050E-05	1.12E-05	3.247E-04	-2.61E-05	1.438E-04	6.61E-07	1.163E-02	-3.82E-06	4.700E-04	-3.54E-05
845.	0.20	.002373	7.29	-1.48	1.81	0.0	6.348E-04	-6.33E-06	-4.694E-05	5.35E-06	8.694E-04	-1.47E-05	6.400E-05	-9.22E-07	1.533E-02	-2.03E-05	5.868E-04	-2.18E-05
845.	0.20	.002372	8.30	-1.41	1.97	0.0	8.101E-04	1.26E-05	-6.810E-05	-9.84E-06	1.168E-03	2.37E-05	6.288E-05	2.76E-07	1.743E-02	8.04E-05	7.023E-04	3.65E-05
856.	0.20	.002373	2.29	-1.33	1.40	0.0	-1.483E-04	1.32E-05	-1.665E-05	-1.02E-05	-4.405E-04	2.13E-05	1.741E-04	-1.68E-06	5.779E-03	2.79E-05	4.069E-04	2.93E-05
856.	0.20	.002372	1.30	-1.34	1.44	0.0	-3.456E-04	-3.36E-06	-3.130E-05	2.90E-06	-7.754E-04	-6.04E-06	1.336E-04	7.80E-07	3.759E-03	3.47E-05	4.058E-04	-6.09E-06
STANDARD DEVIATIONS								1.69E-05		1.35E-05		3.13E-05		1.85E-06		8.16E-05		4.47E-05
COLLECTIVE PITCH DERIVATIVES							1.758E-04		1.655E-05		2.980E-04		2.315E-05		2.009E-03		-9.723E-06	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							5.955E-05		2.020E-04		1.035E-04		4.607E-04		1.019E-03		-3.101E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-1.611E-04		-2.364E-04		-3.066E-04		-3.772E-04		-6.590E-04		5.631E-04	
RESIDUAL							-2.601E-04		5.545E-04		-5.787E-04		1.262E-03		3.419E-03		-8.000E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
852.	0.20	.002365	7.28	-2.88	2.96	0.0	2.753E-05	-1.17E-05	-2.241E-05	8.27E-06	-2.217E-04	-2.61E-05	1.239E-04	6.48E-06	1.427E-02	-1.03E-04	6.733E-04	-3.45E-05
850.	0.20	.002368	8.31	-3.01	2.98	0.0	1.763E-04	-5.35E-05	-2.159E-05	3.18E-05	3.479E-05	-8.43E-05	1.255E-04	2.31E-05	1.629E-02	8.90E-05	7.620E-04	-2.22E-04
847.	0.20	.002365	9.30	-2.98	3.06	0.0	4.086E-04	1.60E-05	-4.349E-05	-1.12E-05	4.161E-04	3.30E-05	9.965E-05	-8.18E-06	1.828E-02	1.30E-04	9.242E-04	4.78E-05
851.	0.20	.002363	11.31	-3.19	3.20	0.0	7.811E-04	3.23E-05	-6.458E-05	-1.91E-05	1.027E-03	4.97E-05	5.304E-05	-1.35E-05	2.179E-02	-5.10E-05	1.394E-03	1.32E-04
850.	0.20	.002366	3.30	-2.63	2.38	0.0	-6.039E-04	-2.72E-06	-6.182E-06	1.69E-06	-1.287E-03	-5.81E-06	2.312E-04	1.45E-06	6.734E-03	-1.06E-05	5.048E-04	-9.66E-06
849.	0.20	.002365	1.31	-2.60	2.46	0.0	-9.557E-04	1.58E-05	-4.426E-05	-1.24E-05	-1.839E-03	3.39E-05	1.735E-04	-8.85E-06	3.070E-03	3.38E-05	4.645E-04	7.31E-05
STANDARD DEVIATIONS								4.85E-05		2.94E-05		7.92E-05		2.13E-05		1.40E-04		1.94E-04
COLLECTIVE PITCH DERIVATIVES							1.805E-04		1.517E-05		2.875E-04		1.801E-05		1.896E-03		6.255E-06	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-7.215E-05		2.922E-04		-1.889E-04		2.228E-04		9.708E-04		-2.221E-03	
LATERAL CYCLIC PITCH DERIVATIVES							-1.666E-04		-1.740E-05		-1.847E-04		-2.217E-04		5.560E-04		-6.781E-04	
RESIDUAL							-9.909E-04		1.517E-04		-2.288E-03		1.283E-03		1.709E-03		-3.732E-03	
852.	0.20	.002365	11.31	-5.21	4.79	0.0	2.747E-06	-2.10E-06	-1.204E-05	6.34E-06	-3.122E-04	8.96E-07	2.040E-04	6.50E-06	2.009E-02	7.34E-05	1.450E-03	-2.20E-05
850.	0.20	.002363	12.30	-5.27	4.86	0.0	2.185E-04	4.57E-06	-4.743E-05	-2.19E-05	4.383E-05	2.15E-05	1.660E-04	-4.86E-05	2.174E-02	2.03E-04	1.727E-03	-2.23E-05
851.	0.20	.002365	13.32	-5.23	5.05	0.0	4.272E-04	-2.04E-07	-1.934E-05	1.09E-05	3.727E-04	1.52E-05	2.519E-04	2.60E-05	2.314E-02	1.13E-04	2.092E-03	1.20E-05
848.	0.20	.002363	10.31	-5.26	4.50	0.0	-2.159E-04	4.30E-07	-1.077E-05	7.00E-06	-6.648E-04	1.56E-05	2.393E-04	1.65E-05	1.845E-02	1.25E-04	1.222E-03	6.36E-06
850.	0.20	.002356	9.27	-5.01	4.61	0.0	-4.351E-04	4.38E-06	-7.544E-06	-6.94E-07	-1.026E-03	2.66E-05	2.038E-04	2.97E-07	1.675E-02	1.73E-04	1.042E-03	4.24E-06
851.	0.20	.002360	7.27	-4.72	4.33	0.0	-8.990E-04	2.92E-07	-2.701E-06	-1.27E-06	-1.842E-03	9.68E-06	2.744E-04	-4.02E-06	1.287E-02	1.23E-04	7.963E-04	-8.84E-06
STANDARD DEVIATIONS								4.93E-06		1.86E-05		2.95E-05		4.10E-05		2.45E-04		2.51E-05
COLLECTIVE PITCH DERIVATIVES							1.943E-04		-1.111E-05		2.881E-04		6.336E-05		1.226E-03		4.091E-04	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.271E-04		-1.981E-05		-4.442E-04		3.446E-04		-2.823E-03		1.301E-03	
LATERAL CYCLIC PITCH DERIVATIVES							1.221E-04		3.941E-05		3.376E-04		-3.633E-04		1.999E-03		-7.496E-04	
RESIDUAL							-3.441E-03		-1.848E-04		-7.506E-03		3.017E-03		-1.816E-02		7.217E-03	
850.	0.20	.002325	1.00	-0.41	0.88	0.11	-1.934E-05	1.09E-05	5.159E-06	-4.06E-06	-8.748E-05	3.06E-05	-2.114E-05	-3.25E-06	2.419E-03	5.73E-05	4.262E-04	1.53E-06
850.	0.20	.002328	1.00	-0.33	0.92	1.18	-2.333E-05	-3.00E-05	2.230E-05	6.64E-06	-1.003E-04	-4.94E-05	-3.225E-05	5.36E-06	2.980E-03	-7.60E-05	3.847E-04	-3.32E-06
849.	0.19	.002325	1.00	-0.30	1.01	3.14	6.702E-05	-3.67E-05	6.151E-05	1.15E-05	5.426E-05	-5.73E-05	3.207E-05	1.23E-05	4.291E-03	-3.16E-05	3.635E-04	5.50E-06
849.	0.19	.002325	1.00	-0.24	1.03	5.25	1.980E-04	3.48E-05	6.863E-05	-1.09E-05	2.693E-04	5.36E-05	5.037E-05	-1.18E-05	5.627E-03	3.74E-05	3.137E-04	-6.67E-06
850.	0.20	.002326	1.00	-0.32	0.95	-0.87	-2.106E-05	2.54E-06	-2.598E-05	2.94E-06	-1.143E-04	7.08E-06	-1.291E-04	5.50E-06	1.991E-03	7.71E-05	4.101E-04	9.70E-06
850.	0.20	.002325	1.00	-0.37	0.94	-2.78	-6.665E-05	1.12E-05	-6.066E-05	-5.96E-06	-2.011E-04	1.48E-05	-1.791E-04	-8.02E-06	7.333E-04	-3.07E-05	4.258E-04	-9.55E-06
STANDARD DEVIATIONS								4.44E-05		1.33E-05		7.00E-05		1.46E-05		9.58E-05		1.17E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-2.086E-05		-2.572E-04		-1.806E-04		-8.077E-04		3.042E-04		-3.268E-04	
LATERAL CYCLIC PITCH DERIVATIVES							5.216E-04		2.715E-05		7.800E-04		4.232E-06		1.221E-03		-2.742E-05	
ROTOR PITCH DERIVATIVES							2.403E-05		2.047E-05		4.716E-05		4.183E-05		5.808E-04		-8.775E-06	
RESIDUAL							-5.075E-04		-1.188E-04		-8.826E-04		-3.591E-04		1.350E-03		3.151E-04	
850.	0.20	.002341	4.00	-1.14	1.36	0.07	-4.746E-06	-5.17E-06	-3.560E-06	-6.74E-06	-2.905E-04	-1.05E-05	1.604E-04	-1.39E-06	7.885E-03	1.45E-05	4.007E-04	6.19E-06
848.	0.20	.002341	4.00	-1.16	1.41	1.18	4.196E-05	9.42E-06	-1.347E-06	2.84E-06	-2.220E-04	1.33E-05	1.455E-04	5.77E-07	8.588E-03	-1.33E-06	3.816E-04	-5.18E-06
852.	0.20	.002341	4.00	-1.08	1.33	3.10	7.137E-05	-2.26E-05	6.851E-05	1.01E-05	-1.478E-04	-4.02E-05	2.586E-04	-6.80E-07	9.120E-03	-8.83E-05	3.366E-04	4.57E-06
850.	0.20	.002341	4.00	-1.01	1.35	5.26	1.411E-04	1.22E-05	8.578E-05	-4.74E-06	-2.031E-05	2.22E-05	3.074E-04	1.40E-06	1.119E-02	4.10E-05	2.736E-04	-3.03E-06
849.	0.20	.002342	4.00	-1.12	1.27	-0.88	1.206E-05	8.99E-06	2.076E-05	-4.67E-06	-2.566E-04	1.28E-05	2.034E-04	-8.93E-06	7.300E-03	2.55E-05	4.042E-04	-2.64E-06
848.	0.20	.002345	4.00	-1.13	1.26	-2.85	-5.192E-05	4.30E-06	7.848E-06	1.09E-06	-3.673E-04	1.03E-05	1.906E-04	9.56E-06	6.003E-03	6.26E-06	4.331E-04	-1.55E-06
848.	0.20	.002345	4.00	-1.10	1.28	-4.97	-1.602E-04	-3.16E-06	-8.852E-06	2.06E-06	-5.713E-04	-6.91E-06	1.384E-04	-2.67E-06	4.550E-03	-2.05E-05	4.376E-04	-2.61E-08
STANDARD DEVIATIONS								1.77E-05		8.27E-06		3.01E-05		7.81E-06		6.00E-05		5.90E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-5.030E-04		2.598E-04		-8.752E-04		3.375E-04		-9.880E-04		-5.019E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-4.315E-04		-2.691E-04		-9.191E-04		-6.208E-04		-4.883E-04		-1.227E-04	
ROTOR PITCH DERIVATIVES							3.475E-05		9.498E-06		6.390E-05		1.727E-05		6.542E-04		-1.091E-05	
RESIDUAL							1.694E-05		6.663E-04		-2.885E-05		1.393E-03		7.361E-03		-9.835E-06	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
850.	0.20	.002309	8.00	-3.89	3.70	0.13	1.293E-05	2.26E-06	-1.534E-05	-1.06E-07	-4.356E-04	1.18E-05	-2.565E-04	-5.50E-06	1.418E-02	1.18E-05	7.122E-04	-1.94E-06
849.	0.20	.002305	8.00	-3.83	3.69	1.22	2.677E-05	1.18E-05	-5.822E-06	-7.96E-06	-4.104E-04	1.95E-05	-2.408E-04	-1.92E-05	1.490E-02	-2.46E-06	7.131E-04	2.74E-05
851.	0.20	.002309	8.00	-3.83	3.97	3.13	3.786E-05	-3.01E-06	1.414E-05	-3.04E-06	-4.328E-04	-4.45E-06	-2.423E-04	-3.02E-06	1.607E-02	6.35E-05	6.690E-04	-8.74E-06
850.	0.20	.002311	8.00	-3.89	3.67	5.32	9.105E-05	-3.05E-06	6.793E-05	3.86E-06	-3.140E-04	-5.93E-06	-1.099E-04	8.33E-06	1.755E-02	8.55E-06	6.208E-04	-5.90E-06
851.	0.20	.002313	8.00	-3.78	3.74	-0.88	-3.310E-05	-3.44E-06	-2.107E-05	9.85E-06	-5.173E-04	-1.60E-05	-2.593E-04	2.24E-05	1.350E-02	-5.11E-05	7.177E-04	1.94E-06
850.	0.20	.002315	8.00	-3.72	3.52	-2.87	-7.528E-05	-6.58E-06	-5.169E-05	-2.71E-06	-5.380E-04	-1.44E-05	-2.746E-04	1.58E-06	1.248E-02	8.13E-05	7.067E-04	-1.39E-05
847.	0.20	.002314	8.00	-3.48	3.58	-4.96	-1.528E-04	2.18E-06	-8.039E-05	9.18E-08	-6.278E-04	7.13E-06	-3.385E-04	-2.77E-06	1.114E-02	7.86E-06	7.230E-04	2.59E-06
STANDARD DEVIATIONS								8.60E-06		8.00E-06		1.91E-05		1.81E-05		6.72E-05		1.89E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-2.141E-04		1.181E-05		-1.932E-04		2.305E-05		4.615E-04		-1.636E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-2.114E-05		-4.945E-05		-1.777E-04		-2.326E-04		-4.873E-04		8.202E-05	
ROTOR PITCH DERIVATIVES							1.584E-05		1.494E-05		2.555E-05		2.402E-05		6.452E-04		-1.634E-05	
RESIDUAL							-7.452E-04		2.118E-04		-5.440E-04		6.965E-04		1.768E-02		-2.235E-04	
850.	0.20	.002334	12.00	-6.41	5.62	0.08	-2.526E-05	2.91E-05	6.061E-06	-1.84E-06	-6.423E-04	4.20E-05	-1.928E-04	-3.93E-06	1.976E-02	3.72E-04	1.520E-03	2.20E-05
850.	0.20	.002335	12.00	-6.36	5.79	1.19	9.662E-06	-1.23E-06	6.594E-06	-1.92E-06	-5.931E-04	1.90E-06	-1.973E-04	-6.64E-06	2.051E-02	1.30E-04	1.566E-03	2.49E-05
849.	0.20	.002336	12.00	-6.19	6.01	3.12	4.469E-05	-3.52E-05	4.327E-05	5.00E-06	-5.694E-04	-6.80E-05	-1.316E-04	1.23E-05	2.176E-02	4.23E-04	1.598E-03	3.24E-08
850.	0.19	.002336	12.00	-6.09	5.90	5.25	5.268E-05	-1.06E-05	1.275E-04	2.46E-06	-5.499E-04	-2.01E-05	2.310E-05	2.67E-06	2.168E-02	2.51E-04	1.654E-03	1.62E-05
850.	0.20	.002336	12.00	-6.14	5.80	-0.87	-3.954E-05	4.90E-05	-5.373E-06	-6.25E-06	-6.441E-04	8.24E-05	-2.391E-04	-1.39E-05	1.827E-02	2.18E-04	1.484E-03	3.45E-05
850.	0.20	.002336	12.00	-6.30	5.50	-2.85	-1.557E-04	3.13E-05	-2.034E-05	-7.76E-06	-8.072E-04	5.41E-05	-2.490E-04	-8.23E-06	1.693E-02	2.51E-04	1.405E-03	2.31E-05
850.	0.20	.002336	12.00	-6.32	5.41	-4.98	-3.151E-04	-5.97E-05	-3.551E-05	1.08E-05	-1.059E-03	-1.08E-04	-2.910E-04	1.62E-05	1.566E-02	3.46E-04	1.312E-03	4.87E-08
STANDARD DEVIATIONS								5.52E-05		9.19E-06		9.68E-05		1.57E-05		4.57E-04		3.21E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-2.742E-04		1.868E-04		-3.741E-04		2.856E-04		-5.953E-03		-1.434E-04	
LATERAL CYCLIC PITCH DERIVATIVES							3.439E-04		-2.081E-04		4.839E-04		-4.052E-04		4.486E-03		1.068E-04	
ROTOR PITCH DERIVATIVES							2.065E-05		2.265E-05		2.621E-05		4.526E-05		5.133E-04		2.986E-05	
RESIDUAL							-3.747E-03		2.374E-03		-5.805E-03		3.916E-03		-4.404E-02		-2.384E-05	
849.	0.26	.002359	1.17	-0.41	1.04	0.0	7.790E-06	-1.30E-05	4.212E-06	1.94E-05	-1.010E-04	-8.34E-05	7.042E-05	8.14E-05	2.661E-03	-9.78E-05	3.249E-04	3.74E-05
849.	0.26	.002359	1.16	0.25	0.76	0.0	2.514E-04	3.93E-06	-8.804E-05	1.93E-05	3.611E-04	-1.16E-05	-1.691E-04	-5.83E-06	3.322E-03	-1.05E-04	2.670E-04	1.88E-05
850.	0.27	.002358	1.17	0.79	0.77	0.0	4.168E-04	3.55E-05	-1.982E-04	-7.31E-06	6.531E-04	3.86E-05	-3.960E-04	-7.34E-05	3.911E-03	7.17E-05	2.288E-04	1.41E-05
849.	0.27	.002358	1.16	2.40	0.86	0.0	7.694E-04	-1.13E-06	-4.535E-04	-6.52E-06	1.350E-03	2.63E-05	-8.441E-04	-2.68E-05	5.105E-03	5.48E-05	8.416E-05	-2.83E-05
850.	0.26	.002359	1.17	3.39	0.83	0.0	1.016E-03	-5.89E-06	-6.154E-04	-1.90E-05	1.816E-03	3.32E-05	-1.087E-03	2.03E-05	5.905E-03	6.95E-05	8.979E-06	-4.17E-05
848.	0.26	.002359	1.17	-1.39	1.41	0.0	-3.268E-04	-2.03E-05	1.175E-04	-5.25E-06	-6.321E-04	-4.89E-05	2.516E-04	3.16E-05	1.699E-03	-5.27E-05	3.842E-04	3.83E-05
848.	0.26	.002358	1.17	-2.26	1.49	0.0	-5.822E-04	-3.58E-05	2.741E-04	1.90E-05	-1.063E-03	-5.91E-05	5.085E-04	4.31E-05	1.047E-03	-2.61E-05	4.197E-04	2.01E-05
848.	0.26	.002353	1.16	-3.31	1.64	0.0	-7.895E-04	4.83E-05	4.266E-04	1.51E-05	-1.492E-03	3.47E-05	7.078E-04	-4.25E-05	1.917E-04	1.25E-05	4.685E-04	4.74E-06
847.	0.26	.002354	1.16	-4.10	1.80	0.0	-1.049E-03	2.14E-05	5.223E-04	-5.85E-06	-1.899E-03	3.69E-05	9.093E-04	-4.56E-05	-5.117E-04	8.36E-06	5.043E-04	-7.52E-06
851.	0.26	.002349	1.16	-5.24	1.50	0.0	-1.318E-03	-2.50E-05	6.901E-04	-2.87E-05	-2.325E-03	3.33E-05	1.369E-03	2.18E-05	-1.136E-03	1.05E-04	5.301E-04	-5.59E-05
STANDARD DEVIATIONS								3.15E-05		1.96E-05		5.34E-05		5.45E-05		8.79E-05		3.70E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.522E-04		-1.561E-04		4.553E-04		-2.971E-04		7.778E-04		-6.272E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.134E-04		-4.200E-05		-3.170E-04		-1.640E-04		-5.449E-04		-8.810E-06	
RESIDUAL							3.469E-04		-3.574E-05		5.000E-04		3.736E-05		3.647E-03		2.708E-04	
845.	0.27	.002328	4.08	-1.94	2.11	0.0	2.891E-05	-2.01E-05	5.137E-06	-1.37E-06	-1.209E-04	-1.78E-05	-2.160E-05	3.23E-05	7.620E-03	-1.47E-04	3.512E-04	1.26E-05
846.	0.26	.002326	4.05	-0.98	1.64	0.0	3.312E-04	-3.85E-05	-1.261E-04	-2.25E-06	4.401E-04	-5.71E-05	-1.525E-04	7.99E-05	8.598E-03	-2.46E-04	2.757E-04	2.73E-05
847.	0.26	.002327	4.16	-0.07	1.48	0.0	6.275E-04	1.61E-05	-2.623E-04	-4.60E-06	9.583E-04	7.65E-06	-3.924E-04	7.48E-05	9.697E-03	7.93E-05	1.802E-04	1.15E-05
847.	0.27	.002328	4.16	0.63	1.39	0.0	7.645E-04	-2.41E-05	-3.471E-04	1.49E-05	1.245E-03	-3.87E-05	-6.443E-04	1.21E-05	1.014E-02	-6.53E-05	1.146E-04	6.12E-06
848.	0.27	.002329	4.15	1.12	1.35	0.0	9.151E-04	7.22E-06	-4.354E-04	-1.91E-07	1.519E-03	1.12E-05	-8.497E-04	-5.75E-05	1.070E-02	9.01E-05	6.768E-05	8.58E-07
851.	0.27	.002326	4.14	1.91	1.37	0.0	1.115E-03	3.39E-05	-5.646E-04	-7.46E-06	1.911E-03	7.82E-05	-1.110E-03	-7.64E-05	1.132E-02	7.41E-05	-4.146E-05	-4.28E-05
849.	0.26	.002325	4.15	-3.00	2.14	0.0	-1.907E-04	5.53E-06	1.725E-04	5.53E-06	-5.814E-04	-1.71E-05	2.598E-04	6.48E-06	7.301E-03	1.55E-04	4.390E-04	1.16E-05
849.	0.26	.002326	4.14	-3.99	2.12	0.0	-4.088E-04	4.04E-06	3.166E-04	-2.41E-06	-1.011E-03	-3.94E-05	5.363E-04	-1.75E-05	6.328E-03	1.44E-05	5.100E-04	9.01E-07
851.	0.26	.002324	4.13	-5.08	2.14	0.0	-6.684E-04	-6.46E-06	4.757E-04	-6.64E-06	-1.444E-03	-3.27E-06	8.508E-04	-2.72E-05	5.460E-03	3.46E-05	6.042E-04	3.49E-06
850.	0.27	.002325	4.13	-5.93	2.34	0.0	-8.779E-04	2.25E-05	6.140E-04	4.52E-06	-1.812E-03	7.62E-05	1.057E-03	-2.71E-05	4.680E-03	-1.04E-05	6.453E-04	-3.10E-05
STANDARD DEVIATIONS								2.54E-05		7.62E-06		5.21E-05		5.87E-05		1.44E-04		2.40E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.249E-04		-1.534E-04		4.231E-04		-2.993E-04		8.088E-04		-8.343E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.226E-04		-3.752E-05		-4.119E-04		-2.355E-04		-2.101E-04		2.097E-05	
RESIDUAL							9.559E-04		-2.127E-04		1.589E-03		-1.393E-04		9.583E-03		1.321E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_o	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
852.	0.27	.002360	7.99	-5.03	3.48	0.0	-6.361E-05	2.37E-05	4.610E-05	1.44E-05	-2.659E-04	7.07E-05	9.426E-05	-3.55E-05	1.410E-02	1.10E-04	6.668E-04	1.22E-05
853.	0.27	.002361	7.99	-3.70	3.75	0.0	1.493E-04	-3.69E-06	-1.188E-04	5.63E-06	1.512E-04	3.81E-05	-1.711E-04	2.75E-05	1.495E-02	2.80E-05	5.439E-04	-6.84E-06
852.	0.26	.002356	7.99	-2.80	3.48	0.0	3.782E-04	-6.32E-06	-2.715E-04	-4.51E-06	5.669E-04	3.59E-05	-4.274E-04	-1.12E-05	1.578E-02	7.68E-05	4.504E-04	-5.27E-06
845.	0.26	.002353	7.99	-1.66	3.33	0.0	6.087E-04	-3.81E-05	-4.295E-04	1.55E-06	9.754E-04	-3.39E-05	-6.552E-04	3.90E-05	1.653E-02	-8.91E-05	3.554E-04	9.09E-06
852.	0.27	.002355	7.99	-0.63	3.08	0.0	9.174E-04	1.59E-05	-6.047E-04	-1.61E-05	1.425E-03	-4.51E-05	-5.607E-04	-1.73E-05	1.747E-02	-1.56E-05	2.240E-04	-1.73E-05
845.	0.27	.002357	7.99	-5.91	3.64	0.0	-2.648E-04	3.06E-05	1.809E-04	1.96E-05	-7.016E-04	1.32E-05	3.275E-04	-1.58E-05	1.323E-02	-3.80E-05	7.679E-04	2.69E-05
854.	0.27	.002359	7.98	-6.75	3.99	0.0	-5.074E-04	1.83E-05	3.069E-04	4.94E-06	-1.175E-03	-4.68E-05	5.182E-04	-2.71E-05	1.242E-02	-8.68E-05	8.453E-04	1.05E-05
852.	0.27	.002357	7.98	-8.04	3.57	0.0	-7.587E-04	-2.39E-05	4.355E-04	-5.07E-06	-1.541E-03	-1.61E-05	8.979E-04	3.25E-05	1.162E-02	-3.63E-05	9.166E-04	-1.05E-05
852.	0.27	.002356	7.99	-8.88	4.11	0.0	-1.012E-03	-1.66E-05	5.769E-04	-2.04E-05	-2.004E-03	-1.68E-05	1.075E-03	7.69E-06	1.087E-02	3.55E-05	1.012E-03	-1.98E-05
STANDARD DEVIATIONS								2.72E-05		1.51E-05		4.80E-05		3.18E-05		8.03E-05		1.80E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.105E-04		-1.336E-04		3.879E-04		-2.446E-04		7.658E-04		-8.899E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.514E-04		8.114E-05		-2.497E-04		-8.397E-06		-3.233E-04		5.448E-05	
RESIDUAL							1.501E-03		-9.230E-04		2.485E-03		-1.072E-03		1.857E-02		1.717E-05	
851.	0.26	.002347	11.94	-7.55	5.77	0.0	7.989E-06	-1.24E-05	2.916E-06	2.74E-06	-3.077E-04	6.57E-05	-4.662E-05	-2.10E-05	1.592E-02	-1.10E-04	1.604E-03	-7.73E-06
852.	0.26	.002345	11.94	-6.50	5.69	0.0	2.203E-04	6.85E-06	-1.708E-04	-2.61E-06	3.839E-05	3.38E-05	-3.339E-04	-4.35E-05	2.086E-02	-3.16E-05	1.481E-03	-1.78E-05
850.	0.26	.002345	11.99	-5.41	5.62	0.0	4.036E-04	-5.74E-06	-3.365E-04	4.62E-06	3.983E-04	1.92E-06	-5.945E-04	-2.96E-05	2.183E-02	5.66E-05	1.382E-03	-6.00E-07
851.	0.26	.002347	11.99	-4.06	5.71	0.0	6.496E-04	6.82E-06	-5.162E-04	-3.29E-06	8.136E-04	-3.77E-05	-8.256E-04	5.41E-05	2.269E-02	1.54E-05	1.288E-03	1.55E-05
845.	0.26	.002345	11.99	-8.52	5.86	0.0	-1.588E-04	2.67E-06	1.624E-04	4.02E-07	-7.692E-04	-4.10E-05	2.356E-04	1.20E-05	1.929E-02	7.58E-05	1.729E-03	8.46E-06
845.	0.26	.002345	11.99	-9.96	5.57	0.0	-3.887E-04	3.54E-06	3.011E-04	-1.88E-06	-1.215E-03	-2.16E-05	5.687E-04	2.78E-05	1.645E-02	2.08E-05	1.814E-03	9.06E-06
STANDARD DEVIATIONS								1.10E-05		4.09E-06		5.49E-05		4.85E-05		8.70E-05		1.60E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.780E-04		-1.440E-04		3.508E-04		-2.443E-04		7.448E-04		-9.458E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-8.339E-05		2.243E-04		-1.320E-04		4.137E-04		-9.861E-04		1.780E-04	
RESIDUAL							1.845E-03		-2.381E-03		3.036E-03		-2.525E-03		3.134E-02		-1.287E-04	
848.	0.26	.002355	1.13	-0.46	1.00	0.0	8.987E-06	-1.42E-05	7.035E-07	-8.63E-06	-1.315E-04	-6.21E-05	7.729E-05	-3.22E-05	2.556E-03	7.10E-06	3.447E-04	-1.47E-05
850.	0.26	.002352	1.12	-0.45	1.65	0.0	-2.410E-04	-2.69E-05	-2.034E-04	-1.02E-05	-5.759E-04	-6.54E-05	-2.627E-04	-1.34E-05	2.406E-03	-8.87E-06	3.243E-04	-1.30E-05
849.	0.26	.002350	1.12	-0.46	2.80	0.0	-4.825E-04	3.45E-06	-4.150E-04	3.12E-06	-9.959E-04	1.79E-05	-6.410E-04	6.11E-06	2.244E-03	-8.39E-06	3.195E-04	6.68E-06
851.	0.27	.002328	1.13	-0.32	0.96	0.0	7.315E-05	9.06E-06	-3.963E-06	-7.46E-06	-1.099E-05	-6.88E-06	7.642E-05	-2.05E-05	2.770E-03	1.16E-04	3.649E-04	6.49E-06
852.	0.27	.002328	1.11	-0.32	0.43	0.0	2.118E-04	-1.89E-06	1.378E-04	1.02E-05	2.952E-04	2.20E-05	3.130E-04	-3.58E-06	2.747E-03	3.13E-06	3.638E-04	-8.15E-06
857.	0.26	.002328	1.12	-0.50	-0.05	0.0	3.178E-04	7.38E-06	2.658E-04	2.27E-06	4.995E-04	3.24E-05	6.083E-04	4.82E-05	2.563E-03	-1.27E-04	4.043E-04	1.72E-05
858.	0.26	.002330	1.12	-0.96	-0.71	0.0	4.717E-04	7.23E-05	5.005E-04	2.56E-05	8.364E-04	1.68E-04	1.011E-03	6.92E-05	2.507E-03	4.26E-05	4.250E-04	1.41E-05
861.	0.26	.002327	1.10	-1.15	-1.78	0.0	6.257E-04	-3.78E-05	7.543E-04	6.47E-08	1.136E-03	-3.70E-05	1.404E-03	-3.54E-05	2.362E-03	-1.39E-04	4.474E-04	5.69E-06
863.	0.26	.002327	1.09	-1.31	-2.66	0.0	8.669E-04	-1.14E-05	9.650E-04	-1.50E-05	1.515E-03	-6.92E-05	1.823E-03	-1.84E-05	2.645E-03	1.14E-04	4.523E-04	-1.44E-05
STANDARD DEVIATIONS								3.62E-05		1.43E-05		8.61E-05		4.16E-05		1.03E-04		1.45E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.117E-04		-1.181E-04		3.144E-04		-2.254E-04		7.228E-04		-1.491E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.826E-04		-2.378E-04		-5.245E-04		-4.209E-04		-1.636E-04		-2.585E-05	
RESIDUAL							4.033E-04		1.935E-04		6.001E-04		4.280E-04		3.043E-03		3.784E-04	
851.	0.27	.002360	4.05	-1.92	1.97	0.0	4.103E-05	-4.66E-07	-5.770E-06	9.09E-06	1.522E-06	2.04E-05	1.139E-04	5.00E-06	7.875E-03	1.51E-05	3.607E-04	-1.80E-06
851.	0.26	.002361	4.05	-1.98	1.14	0.0	2.394E-04	-8.76E-06	1.656E-04	-1.18E-05	3.154E-04	-3.26E-05	4.672E-04	-5.83E-06	7.634E-03	-5.27E-05	3.924E-04	3.45E-07
848.	0.27	.002360	4.04	-1.95	0.47	0.0	4.434E-04	2.78E-05	3.271E-04	-2.35E-06	6.657E-04	2.28E-05	7.919E-04	-7.88E-06	7.583E-03	1.10E-04	4.077E-04	2.10E-06
850.	0.26	.002363	4.04	-2.05	-0.42	0.0	6.150E-04	-2.30E-05	5.409E-04	2.71E-06	1.012E-03	-2.08E-05	1.178E-03	1.10E-06	7.777E-03	-1.41E-04	4.455E-04	3.28E-06
853.	0.26	.002363	4.04	-2.18	-1.30	0.0	8.522E-04	-3.16E-06	7.468E-04	3.10E-06	1.444E-03	1.72E-05	1.539E-03	6.85E-06	8.025E-03	4.93E-05	4.750E-04	-7.45E-06
851.	0.26	.002361	4.04	-2.39	-2.24	0.0	1.092E-03	7.19E-06	9.634E-04	-8.26E-07	1.839E-03	1.39E-06	1.869E-03	-4.64E-06	8.080E-03	7.25E-06	5.382E-04	2.70E-06
STANDARD DEVIATIONS								2.19E-05		9.05E-06		3.17E-05		7.57E-06		1.12E-04		5.21E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.782E-05		-2.507E-05		2.094E-05		4.806E-04		-4.465E-04		-1.366E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-2.514E-04		-2.302E-04		-4.441E-04		-4.740E-04		1.929E-06		-2.578E-05	
RESIDUAL							5.891E-04		3.856E-04		8.943E-04		1.964E-03		6.561E-03		1.508E-04	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
845.	0.26	.002346	7.98	-4.39	3.64	0.0	-3.809E-05	-4.45E-05	1.372E-05	-7.50E-07	-2.502E-04	-6.76E-05	6.391E-05	-6.44E-05	1.513E-02	-1.36E-04	7.048E-04	-2.83E-05
847.	0.26	.002344	8.01	-4.23	4.49	0.0	-2.296E-04	2.11E-05	-1.865E-04	8.27E-06	-5.005E-04	9.82E-05	-3.186E-04	-2.21E-05	1.524E-02	1.46E-06	6.559E-04	-1.34E-05
848.	0.26	.002345	7.94	-4.12	5.41	0.0	-5.196E-04	-5.40E-07	-3.686E-04	3.59E-05	-1.033E-03	8.12E-06	-6.408E-04	7.43E-05	1.501E-02	-1.58E-04	6.170E-04	1.40E-05
847.	0.26	.002346	7.96	-4.27	6.32	0.0	-7.589E-04	-1.77E-05	-5.951E-04	-5.72E-05	-1.500E-03	-5.94E-05	-1.032E-03	-7.32E-05	1.514E-02	1.91E-04	5.660E-04	1.73E-05
850.	0.26	.002346	7.97	-4.49	2.83	0.0	2.501E-04	7.62E-06	2.031E-04	2.53E-06	2.057E-04	6.07E-07	5.061E-04	4.87E-06	1.528E-02	-4.66E-05	7.798E-04	-1.16E-05
850.	0.26	.002347	7.97	-4.50	2.12	0.0	4.736E-04	3.70E-05	3.876E-04	4.56E-05	6.083E-04	7.38E-05	8.922E-04	1.17E-04	1.540E-02	-2.21E-05	8.619E-04	2.26E-05
850.	0.26	.002347	7.97	-4.31	1.78	0.0	5.240E-04	2.81E-05	3.534E-04	-1.56E-06	6.844E-04	2.16E-05	7.771E-04	5.24E-06	1.565E-02	6.20E-05	8.261E-04	-2.73E-05
850.	0.26	.002345	7.96	-4.29	1.81	0.0	5.014E-04	1.71E-05	3.720E-04	2.85E-05	6.129E-04	-3.27E-05	8.279E-04	8.09E-05	1.557E-02	-2.47E-05	8.653E-04	1.49E-05
850.	0.26	.002346	7.97	-4.33	0.80	0.0	7.584E-04	-6.27E-06	5.230E-04	-2.90E-05	1.102E-03	-1.56E-05	1.101E-03	-5.34E-05	1.586E-02	1.42E-04	8.976E-04	-2.20E-05
846.	0.26	.002347	7.96	-4.39	-0.13	0.0	9.875E-04	-4.20E-05	7.209E-04	-3.21E-05	1.530E-03	-2.97E-05	1.477E-03	-7.27E-05	1.576E-02	-5.23E-05	1.017E-03	3.16E-05
STANDARD DEVIATIONS								3.17E-05		3.66E-05		6.08E-05		7.53E-05		1.25E-04		2.55E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.651E-04		-2.705E-04		-1.433E-04		-6.621E-04		5.613E-04		-4.321E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.711E-04		-1.954E-04		-4.618E-04		-3.760E-04		-1.443E-04		-6.672E-05	
RESIDUAL							2.678E-04		-4.620E-04		8.679E-04		-1.410E-03		1.835E-02		7.861E-04	
850.	0.26	.002334	12.03	-7.98	5.96	0.0	-2.634E-06	5.83E-05	1.313E-05	2.50E-05	-3.744E-04	6.73E-05	-1.233E-04	-2.09E-05	1.581E-02	2.43E-05	1.679E-03	-1.73E-05
851.	0.26	.002332	12.03	-8.13	6.66	0.0	-2.256E-04	4.56E-05	-1.778E-04	-3.52E-05	-7.069E-04	7.90E-05	-4.769E-04	-7.16E-05	1.582E-02	1.22E-04	1.553E-03	-6.99E-05
851.	0.26	.002333	12.03	-8.01	7.93	0.0	-4.841E-04	-1.89E-05	-3.352E-04	-2.11E-05	-1.146E-03	-2.54E-06	-8.347E-04	-5.03E-05	1.969E-02	7.50E-05	1.463E-03	-1.62E-05
850.	0.26	.002330	12.03	-8.18	8.79	0.0	-7.556E-04	-4.18E-05	-5.301E-04	-2.80E-05	-1.608E-03	-5.59E-05	-1.143E-03	4.53E-06	1.548E-02	-2.60E-05	1.349E-03	-3.92E-05
847.	0.26	.002331	12.03	-8.27	9.96	0.0	-9.888E-04	-5.45E-06	-6.108E-04	5.18E-05	-2.043E-03	-3.19E-05	-1.493E-03	8.65E-05	1.531E-02	-8.05E-05	1.365E-03	1.04E-04
845.	0.26	.002331	12.03	-7.67	5.09	0.0	2.621E-04	1.04E-05	1.654E-04	-1.28E-06	7.015E-05	1.04E-05	3.257E-04	4.45E-06	1.594E-02	4.36E-06	1.779E-03	-5.55E-06
852.	0.26	.002329	12.03	-7.73	4.04	0.0	4.145E-04	-1.82E-05	3.189E-04	-1.57E-06	3.625E-04	-2.28E-05	6.693E-04	1.44E-05	1.598E-02	-2.85E-05	1.916E-03	1.28E-05
850.	0.26	.002330	12.03	-7.97	2.49	0.0	6.153E-04	-1.17E-05	4.861E-04	-2.77E-05	7.665E-04	6.98E-06	1.029E-03	-4.81E-05	2.004E-02	-2.97E-05	2.033E-03	-4.86E-05
848.	0.26	.002330	12.03	-7.87	1.69	0.0	8.143E-04	-1.84E-05	6.901E-04	3.80E-05	1.051E-03	-5.25E-05	1.474E-03	8.06E-05	2.016E-02	5.44E-07	2.255E-03	8.74E-05
STANDARD DEVIATIONS								3.77E-05		3.65E-05		5.53E-05		6.41E-05		7.07E-05		6.83E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							4.676E-04		1.685E-04		6.684E-04		4.279E-04		2.458E-04		-2.727E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.970E-04		-1.508E-04		-3.443E-04		-3.388E-04		-8.105E-05		-1.110E-04	
RESIDUAL							4.844E-03		2.232E-03		6.944E-03		5.331E-03		2.223E-02		2.140E-03	
848.	0.26	.002342	4.00	-1.65	1.54	0.06	3.326E-05	2.27E-05	-2.285E-05	-5.31E-06	-2.258E-04	3.81E-05	1.546E-04	-1.03E-05	8.116E-03	1.05E-04	3.677E-04	1.93E-05
850.	0.26	.002342	4.00	-1.60	1.71	1.17	1.880E-05	-6.03E-06	-3.628E-05	3.05E-07	-2.560E-04	-1.01E-05	1.164E-04	-1.47E-06	8.861E-03	1.29E-05	3.279E-04	8.74E-06
845.	0.26	.002342	4.00	-1.64	1.58	3.13	1.562E-04	-1.08E-05	2.474E-05	4.15E-06	6.972E-06	-1.16E-05	2.273E-04	1.12E-05	1.064E-02	-5.55E-05	2.343E-04	-9.26E-06
845.	0.26	.002342	4.00	-1.53	1.69	5.24	2.524E-04	3.68E-06	5.360E-05	5.66E-07	1.647E-04	4.74E-06	2.672E-04	3.64E-06	1.234E-02	3.61E-06	1.140E-04	-1.55E-05
850.	0.26	.002342	4.00	-1.64	1.48	-0.89	-3.438E-05	-6.55E-06	-1.055E-05	-2.11E-06	-3.472E-04	-2.31E-05	1.783E-04	-1.16E-05	7.236E-03	5.55E-05	3.754E-04	1.48E-05
851.	0.26	.002342	4.00	-1.59	1.46	-2.67	-1.267E-04	1.24E-06	-1.526E-05	-2.73E-06	-5.021E-04	4.68E-06	1.888E-04	-9.49E-06	5.418E-03	5.86E-05	4.260E-04	3.70E-05
852.	0.26	.002342	4.00	-1.64	1.42	-4.97	-2.346E-04	-3.25E-06	-4.444E-05	5.17E-06	-6.946E-04	-2.79E-06	1.595E-04	1.80E-05	3.523E-03	-7.41E-05	4.428E-04	-4.42E-05
STANDARD DEVIATIONS								1.65E-05		5.31E-06		2.75E-05		1.63E-05		5.35E-05		3.79E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.163E-05		3.450E-04		-1.413E-05		6.826E-04		-1.493E-03		-6.210E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-2.691E-04		-3.273E-04		-5.465E-04		-6.489E-04		-3.634E-04		2.584E-04	
ROTOR PITCH DERIVATIVES							5.434E-05		1.506E-05		9.818E-05		2.189E-05		8.829E-04		-3.523E-05	
RESIDUAL							4.019E-04		1.055E-03		5.492E-04		2.290E-03		6.083E-03		-1.072E-03	
850.	0.26	.002314	8.00	-5.11	3.97	0.07	-7.367E-06	-1.49E-05	-7.812E-06	-1.77E-06	-6.006E-04	-3.38E-05	-2.224E-04	8.70E-07	1.393E-02	1.57E-05	7.388E-04	3.52E-08
845.	0.26	.002315	8.00	-5.22	3.76	1.16	4.958E-05	-2.02E-05	2.749E-05	1.12E-05	-5.191E-04	-5.41E-05	-1.517E-04	1.81E-06	1.486E-02	2.58E-05	7.336E-04	-2.03E-07
845.	0.26	.002314	8.00	-5.19	3.99	3.11	1.590E-04	-5.51E-06	4.443E-05	4.89E-06	-3.587E-04	-1.99E-05	-1.525E-04	4.31E-06	1.645E-02	7.66E-05	7.038E-04	-1.92E-06
845.	0.26	.002316	8.00	-5.15	3.97	5.27	3.175E-04	1.57E-05	6.859E-05	-7.61E-06	-6.123E-05	4.38E-05	-8.310E-05	-4.36E-06	1.802E-02	-1.00E-04	6.820E-04	-8.12E-06
845.	0.26	.002318	8.00	-5.35	3.68	-0.88	-4.206E-05	1.56E-05	-2.287E-05	-5.42E-06	-6.526E-04	5.05E-05	-2.213E-04	-7.00E-06	1.305E-02	-1.47E-04	7.391E-04	-1.04E-05
850.	0.26	.002320	8.00	-5.00	3.88	-2.86	-1.190E-04	1.75E-05	-4.562E-05	2.44E-07	-7.023E-04	4.26E-05	-2.651E-04	-5.78E-06	1.144E-02	-1.33E-04	7.662E-04	-9.95E-06
845.	0.26	.002320	8.00	-5.15	3.55	-4.95	-2.636E-04	-7.84E-06	-7.328E-05	-1.59E-06	-9.403E-04	-1.32E-05	-2.537E-04	3.30E-06	9.578E-03	5.60E-05	8.028E-04	-1.02E-06
STANDARD DEVIATIONS								2.39E-05		9.00E-06		6.03E-05		6.71E-06		1.40E-04		9.63E-06
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.589E-04		3.225E-05		5.873E-04		1.975E-04		-7.625E-06		5.561E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-8.235E-05		-3.152E-05		-3.218E-04		-2.888E-04		-1.383E-04		-5.370E-05	
ROTOR PITCH DERIVATIVES							5.793E-05		1.615E-05		9.364E-05		2.931E-05		6.074E-04		-8.926E-06	
RESIDUAL							1.142E-03		3.162E-04		3.706E-03		1.931E-03		1.437E-02		1.237E-03	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_o	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
848.	0.36	.002321	4.12	-3.16	2.40	0.0	-4.257E-05	-5.09E-06	1.140E-05	3.86E-06	-3.831E-04	1.45E-05	1.382E-04	-5.66E-06	7.047E-03	-9.51E-05	3.883E-04	1.62E-05
852.	0.36	.002322	4.12	-2.24	2.31	0.0	3.005E-04	1.25E-05	-1.453E-04	-3.98E-05	1.193E-04	-1.45E-05	-1.225E-04	8.48E-06	8.440E-03	1.41E-04	2.491E-04	-1.60E-05
850.	0.36	.002319	4.12	-1.09	2.14	0.0	6.818E-04	-1.10E-05	-2.654E-04	-9.97E-06	7.612E-04	-7.42E-05	-4.590E-04	2.76E-05	9.760E-03	-7.80E-06	1.131E-04	-8.33E-06
852.	0.36	.002320	4.12	-0.06	1.83	0.0	1.067E-03	2.55E-05	-3.772E-04	2.32E-05	1.502E-03	-5.42E-05	-8.230E-04	7.78E-06	1.118E-02	6.81E-05	-9.522E-06	2.34E-05
850.	0.36	.002319	4.12	0.81	1.81	0.0	1.328E-03	-2.76E-05	-5.102E-04	-1.58E-06	2.106E-03	8.66E-05	-1.098E-03	-1.76E-05	1.212E-02	-8.50E-05	-1.375E-04	-1.45E-05
852.	0.36	.002318	4.11	-3.98	2.53	0.0	-2.784E-04	4.50E-05	1.438E-04	3.01E-05	-8.679E-04	7.16E-06	4.011E-04	5.45E-06	6.219E-03	1.17E-04	4.872E-04	1.31E-05
851.	0.36	.002408	4.15	-3.00	2.30	0.0	-5.199E-06	-1.64E-05	-1.439E-05	2.51E-06	-2.203E-04	3.38E-05	5.778E-05	-2.35E-05	7.310E-03	-5.39E-05	3.238E-04	-1.58E-05
851.	0.35	.002403	4.14	-4.05	2.15	0.0	-3.492E-04	3.75E-05	5.754E-05	-6.34E-06	-7.054E-04	-7.50E-06	3.449E-04	-3.20E-06	6.179E-03	7.27E-05	4.364E-04	1.93E-05
848.	0.36	.002402	4.14	-4.91	2.37	0.0	-7.546E-04	-7.38E-05	2.248E-04	4.44E-06	-1.270E-03	7.77E-06	6.182E-04	-1.17E-05	4.770E-03	-2.15E-04	5.393E-04	-2.98E-07
849.	0.36	.002402	4.15	-5.95	2.24	0.0	-1.061E-03	5.59E-06	3.342E-04	-6.45E-06	-1.729E-03	6.17E-07	9.097E-04	1.23E-05	3.808E-03	6.81E-05	6.032E-04	-1.69E-05
STANDARD DEVIATIONS								4.00E-05		2.16E-05		5.02E-05		1.74E-05		1.27E-04		1.86E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.647E-04		-1.224E-04		5.149E-04		-2.810E-04		1.235E-03		-9.910E-05	
LATERAL CYCLIC PITCH DERIVATIVES							9.444E-05		5.075E-05		-6.285E-04		1.832E-04		-2.602E-04		1.716E-04	
RESIDUAL							8.881E-04		-5.012E-04		2.740E-03		-1.184E-03		1.167E-02		-3.535E-04	
850.	0.36	.002379	8.01	-6.27	3.96	0.0	-1.476E-05	7.27E-05	-1.422E-05	-6.63E-06	-3.087E-04	1.25E-04	1.197E-05	-8.50E-05	1.276E-02	2.18E-04	6.341E-04	6.70E-06
850.	0.36	.002379	8.02	-5.31	3.81	0.0	3.289E-04	3.58E-05	-1.460E-04	-2.99E-05	1.866E-04	7.32E-05	-2.343E-04	-6.56E-05	1.389E-02	1.33E-04	5.137E-04	-1.42E-05
850.	0.36	.002379	8.01	-4.13	3.86	0.0	6.505E-04	-2.07E-05	-2.619E-04	1.63E-07	6.707E-04	-2.43E-05	-4.813E-04	1.65E-05	1.505E-02	-3.43E-05	3.853E-04	7.29E-06
851.	0.36	.002382	8.01	-3.21	3.61	0.0	1.071E-03	1.23E-06	-3.772E-04	-1.73E-05	1.256E-03	3.78E-06	-7.851E-04	-3.60E-05	1.643E-02	1.20E-04	2.668E-04	-2.61E-05
850.	0.36	.002384	8.02	-2.01	3.59	0.0	1.456E-03	-2.80E-05	-4.774E-04	2.70E-05	1.813E-03	-6.14E-05	-1.013E-03	7.07E-05	1.764E-02	-7.29E-05	1.697E-04	1.84E-05
849.	0.36	.002379	8.02	-7.05	3.83	0.0	-3.172E-04	-1.07E-05	1.054E-04	1.42E-05	-7.920E-04	-2.86E-06	3.362E-04	1.90E-05	1.170E-02	-1.97E-05	7.558E-04	1.72E-05
851.	0.36	.002378	8.02	-7.92	4.03	0.0	-6.824E-04	-1.31E-05	1.951E-04	5.76E-06	-1.373E-03	-7.21E-05	6.138E-04	5.73E-05	1.055E-02	-4.05E-05	8.361E-04	1.49E-05
849.	0.36	.002383	8.01	-8.92	4.17	0.0	-1.092E-03	-3.63E-05	3.066E-04	5.27E-06	-1.903E-03	-4.16E-05	8.540E-04	2.10E-05	9.342E-03	-4.34E-06	9.113E-04	-1.62E-05
STANDARD DEVIATIONS								4.33E-05		2.11E-05		8.04E-05		6.66E-05		1.33E-04		2.05E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.383E-04		-1.219E-04		5.118E-04		-2.759E-04		1.159E-03		-1.225E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-3.472E-04		-5.854E-05		-3.419E-04		-2.863E-05		-6.170E-04		-1.197E-04	
RESIDUAL							3.411E-03		-5.401E-04		4.132E-03		-1.545E-03		2.226E-02		3.338E-04	
845.	0.36	.002315	8.00	-7.40	4.90	3.10	9.308E-06	4.29E-05	-4.108E-05	-1.44E-05	-7.204E-04	3.44E-05	-1.972E-04	-5.03E-05	1.539E-02	1.52E-04	7.697E-04	-7.63E-06
850.	0.36	.002316	8.00	-4.89	4.72	3.10	6.003E-04	-6.25E-05	-3.890E-04	2.48E-05	5.680E-04	-4.19E-05	-8.482E-04	7.66E-05	1.795E-02	-2.23E-04	4.939E-04	1.05E-05
849.	0.36	.002315	8.00	-4.21	4.32	3.09	8.726E-04	3.98E-05	-5.205E-04	-1.41E-05	1.030E-03	3.06E-05	-1.175E-03	-4.73E-05	1.508E-02	1.42E-04	3.799E-04	-6.97E-06
848.	0.36	.002315	8.00	-8.13	4.39	3.10	-2.672E-04	-4.67E-06	9.239E-05	-1.11E-05	-1.150E-03	-3.28E-05	8.294E-05	-6.16E-06	1.435E-02	-1.15E-05	8.394E-04	3.70E-06
850.	0.36	.002316	8.00	-9.12	4.26	3.09	-5.624E-04	-1.56E-05	2.773E-04	1.48E-05	-1.633E-03	9.47E-06	4.264E-04	2.69E-05	1.314E-02	-5.81E-05	9.425E-04	7.07E-07
STANDARD DEVIATIONS								6.16E-05		2.61E-05		5.02E-05		7.55E-05		2.20E-04		1.07E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.803E-04		-1.562E-04		5.387E-04		-3.107E-04		1.170E-03		-1.135E-04	
LATERAL CYCLIC PITCH DERIVATIVES							4.870E-05		-3.217E-05		-6.078E-05		-1.869E-05		5.245E-05		4.840E-05	
RESIDUAL							1.802E-03		-1.025E-03		3.529E-03		-2.355E-03		2.364E-02		-3.000E-04	
848.	0.36	.002316	8.00	-5.44	2.69	-4.88	5.104E-06	2.00E-05	-2.778E-05	-6.10E-06	-4.739E-04	3.49E-05	-5.693E-05	6.66E-07	8.417E-03	7.09E-05	8.246E-04	-7.47E-07
848.	0.36	.002317	8.00	-4.30	3.05	-4.86	3.263E-04	4.92E-05	-1.906E-04	-1.71E-05	1.573E-04	7.24E-05	-3.903E-04	1.40E-06	9.696E-03	1.81E-04	7.227E-04	1.69E-05
851.	0.36	.002316	8.00	-2.78	2.98	-4.89	7.224E-04	-4.01E-05	-4.154E-04	1.43E-05	9.566E-04	-5.67E-05	-8.649E-04	-1.25E-06	1.140E-02	-1.51E-04	5.260E-04	-1.66E-05
849.	0.36	.002318	8.00	-6.31	2.84	-4.86	-3.108E-04	-5.50E-07	1.321E-04	-2.81E-06	-1.083E-03	-1.95E-05	2.144E-04	-6.21E-07	7.095E-03	-8.94E-06	9.433E-04	2.64E-05
850.	0.36	.002318	8.00	-7.22	2.89	-4.86	-6.296E-04	-2.85E-05	3.104E-04	1.18E-05	-1.649E-03	-2.95E-05	4.960E-04	-6.12E-07	5.768E-03	-1.09E-04	9.861E-04	-2.68E-05
STANDARD DEVIATIONS								5.12E-05		1.85E-05		7.39E-05		1.53E-06		1.90E-04		3.15E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.104E-04		-1.636E-04		5.974E-04		-3.072E-04		1.293E-03		-1.055E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-1.693E-04		9.515E-05		-2.378E-04		4.195E-05		-8.345E-04		8.345E-07	
RESIDUAL							2.129E-03		-1.166E-03		3.381E-03		-1.842E-03		1.762E-02		2.491E-04	
849.	0.50	.002311	8.00	-7.16	3.37	-2.79	7.113E-05	8.03E-05	-2.624E-05	-2.00E-05	-5.713E-04	1.06E-04	-8.547E-05	-2.22E-05	6.758E-03	1.66E-04	4.993E-04	2.60E-05
851.	0.51	.002310	8.00	-8.18	3.16	-2.77	-3.421E-04	2.68E-05	1.521E-04	-8.41E-06	-1.332E-03	5.17E-06	2.946E-04	2.77E-06	5.012E-03	5.37E-05	5.984E-04	1.08E-05
850.	0.50	.002311	8.00	-8.83	3.23	-2.87	-7.819E-04	-4.78E-05	3.400E-04	1.31E-05	-2.024E-03	-2.13E-05	5.988E-04	7.15E-07	3.346E-03	-5.58E-05	6.868E-04	-1.51E-05
849.	0.51	.002307	8.00	-7.94	3.40	-2.86	-4.451E-04	-3.23E-05	1.887E-04	1.06E-05	-1.493E-03	-7.93E-05	2.935E-04	9.27E-06	4.768E-03	-9.08E-05	5.926E-04	-7.29E-06
850.	0.51	.002307	8.00	-6.22	3.43	-2.83	4.297E-04	2.36E-05	-2.088E-04	-1.18E-05	1.297E-04	4.71E-05	-4.330E-04	6.50E-06	8.516E-03	1.04E-04	3.518E-04	9.43E-06
850.	0.50	.002306	8.00	-5.20	3.40	-2.82	8.755E-04	-5.10E-05	-4.182E-04	1.66E-05	9.629E-04	-6.90E-05	-8.863E-04	2.62E-06	1.054E-02	-1.12E-04	1.639E-04	-1.52E-05
STANDARD DEVIATIONS								6.75E-05		1.97E-05		9.11E-05		1.45E-05		1.48E-04		2.15E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							4.894E-04		-2.240E-04		8.936E-04		-4.284E-04		2.115E-03		-1.538E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-6.797E-04		3.007E-04		-1.224E-03		4.018E-04		-2.557E-03		2.072E-04	
RESIDUAL							5.785E-03		-2.623E-03		9.842E-03		-4.484E-03		3.035E-02		-1.326E-03	

TABLE A-I. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
845.	0.36	.002373	12.00	-10.28	5.30	0.0	1.540E-05	-9.56E-06	4.582E-06	-2.78E-07	-3.138E-04	1.45E-05	6.577E-05	9.12E-06	1.798E-02	-2.55E-04	1.557E-03	-1.10E-05
848.	0.36	.002375	11.99	-9.22	5.43	0.0	3.053E-04	-2.31E-05	-1.252E-04	-7.39E-06	1.226E-04	-8.22E-06	-2.290E-04	-2.12E-05	1.921E-02	-1.32E-04	1.467E-03	-1.28E-05
845.	0.35	.002375	11.99	-8.05	5.63	0.0	6.686E-04	1.15E-05	-2.518E-04	4.95E-06	6.378E-04	-3.03E-06	-4.925E-04	1.41E-05	2.028E-02	-2.57E-04	1.369E-03	-1.54E-05
850.	0.35	.002375	11.99	-7.04	5.55	0.0	9.757E-04	-2.85E-06	-3.602E-04	2.08E-07	1.076E-03	2.33E-06	-7.297E-04	3.89E-06	2.150E-02	-2.17E-04	1.271E-03	-1.33E-05
845.	0.36	.002374	11.99	-10.99	5.15	0.0	-1.548E-04	1.10E-05	5.352E-05	3.62E-06	-6.414E-04	-7.74E-06	2.468E-04	7.79E-06	1.732E-02	-2.18E-04	1.607E-03	-1.58E-05
STANDARD DEVIATIONS								2.12E-05		6.79E-06		1.33E-05		2.01E-05		3.49E-04		2.18E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.073E-04		-1.077E-04		4.315E-04		-2.343E-04		1.129E-03		-9.370E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-1.690E-04		-6.354E-05		1.341E-05		-1.200E-04		-6.714E-04		7.915E-05	
RESIDUAL							4.082E-03		-7.658E-04		4.038E-03		-1.717E-03		3.340E-02		1.850E-04	
853.	0.36	.002405	4.14	-3.06	2.44	0.0	-2.099E-05	-1.61E-05	-4.820E-05	8.27E-06	-4.353E-04	-1.84E-05	8.147E-05	7.19E-06	7.335E-03	-3.05E-05	3.212E-04	-6.02E-06
853.	0.36	.002400	4.14	-2.84	3.19	0.0	-1.979E-04	-1.67E-05	-2.415E-04	-5.43E-06	-7.334E-04	-4.77E-05	-2.633E-04	6.08E-06	7.378E-03	1.05E-04	2.819E-04	-3.47E-05
847.	0.36	.002397	4.14	-2.93	3.97	0.0	-3.832E-04	1.35E-05	-4.880E-04	-2.55E-05	-1.165E-03	-9.82E-06	-6.331E-04	-3.83E-06	7.290E-03	7.20E-05	2.802E-04	-6.98E-06
853.	0.36	.002397	4.13	-2.81	4.96	0.0	-6.222E-04	2.67E-05	-7.026E-04	2.06E-05	-1.595E-03	2.16E-05	-1.058E-03	3.00E-05	7.101E-03	-1.63E-05	2.871E-04	2.40E-05
848.	0.36	.002356	4.13	-1.84	6.17	0.0	-8.715E-04	1.64E-06	-9.385E-04	-6.16E-07	-1.670E-03	6.08E-06	-1.649E-03	-2.86E-06	6.890E-03	2.21E-06	2.858E-04	3.49E-06
845.	0.37	.002380	4.06	-2.95	2.32	0.0	1.158E-05	-2.65E-05	-1.446E-05	-5.05E-06	-2.359E-04	4.84E-05	6.222E-05	-6.72E-05	7.248E-03	-1.12E-04	3.565E-04	1.89E-05
850.	0.36	.002377	4.06	-2.90	1.71	0.0	2.197E-04	1.40E-05	1.764E-04	1.00E-05	1.110E-04	3.79E-05	4.178E-04	4.98E-06	7.373E-03	-3.46E-05	3.692E-04	9.80E-06
845.	0.36	.002383	4.06	-2.89	0.80	0.0	4.135E-04	-3.28E-05	4.141E-04	-3.33E-06	5.057E-04	-5.61E-05	8.385E-04	8.52E-06	7.409E-03	-7.42E-05	3.596E-04	-2.85E-05
850.	0.36	.002381	4.05	-2.91	0.04	0.0	6.353E-04	-1.26E-05	6.247E-04	-2.67E-06	9.312E-04	-3.15E-05	1.185E-03	1.88E-06	7.540E-03	-1.16E-05	3.999E-04	-1.11E-05
848.	0.36	.002376	4.05	-3.03	-0.80	0.0	9.076E-04	4.88E-05	8.486E-04	3.68E-06	1.389E-03	4.96E-05	1.586E-03	1.53E-05	7.745E-03	1.06E-04	4.612E-04	3.11E-05
STANDARD DEVIATIONS								2.92E-05		1.38E-05		4.41E-05		2.89E-05		8.28E-05		2.46E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							9.863E-05		1.226E-04		6.039E-04		-1.451E-06		-1.299E-04		5.845E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.652E-04		-2.766E-04		-5.360E-04		-4.609E-04		-8.531E-05		-3.122E-05	
RESIDUAL							9.445E-04		5.943E-04		2.740E-03		1.195E-03		7.176E-03		5.823E-04	
845.	0.36	.002381	8.01	-5.94	3.76	0.0	-1.213E-05	-2.55E-06	-8.718E-07	2.19E-05	-2.302E-04	2.04E-05	3.204E-05	-1.88E-05	1.278E-02	-5.94E-05	6.446E-04	-4.72E-05
850.	0.36	.002380	8.01	-6.27	4.26	0.0	-2.580E-04	-5.39E-05	-2.358E-04	-3.62E-05	-6.393E-04	-4.80E-05	-3.704E-04	-1.00E-04	1.267E-02	-6.09E-05	6.016E-04	-3.44E-05
851.	0.36	.002379	8.01	-6.01	5.73	0.0	-4.727E-04	5.48E-05	-4.851E-04	1.02E-06	-9.692E-04	1.21E-04	-7.707E-04	-2.29E-05	1.276E-02	1.59E-04	5.368E-04	-3.22E-05
850.	0.36	.002376	8.00	-5.58	6.96	0.0	-8.012E-04	-4.16E-05	-7.232E-04	-2.54E-05	-1.474E-03	-4.50E-05	-1.121E-03	-4.63E-05	1.235E-02	-6.50E-05	5.317E-04	3.37E-06
845.	0.35	.002380	8.00	-6.06	7.88	0.0	-1.077E-03	1.14E-05	-5.703E-04	2.57E-05	-2.030E-03	-3.24E-05	-1.512E-03	9.97E-05	1.218E-02	-7.48E-05	4.918E-04	5.51E-05
850.	0.36	.002375	8.00	-5.95	2.97	0.0	2.538E-04	6.23E-05	1.832E-04	2.52E-05	1.140E-04	4.23E-05	4.199E-04	6.20E-05	1.300E-02	4.34E-05	7.274E-04	-1.09E-05
852.	0.36	.002377	8.00	-6.05	1.61	0.0	4.778E-04	-4.20E-05	4.234E-04	-3.03E-05	4.978E-04	-9.46E-05	7.959E-04	-5.88E-05	1.308E-02	-5.53E-05	8.237E-04	1.19E-05
852.	0.36	.002375	8.00	-6.08	0.94	0.0	6.989E-04	1.26E-05	6.224E-04	1.88E-05	8.953E-04	3.74E-05	1.194E-03	8.69E-05	1.322E-02	-1.04E-05	9.001E-04	5.05E-05
STANDARD DEVIATIONS								5.21E-05		3.16E-05		8.07E-05		8.70E-05		1.14E-04		4.54E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.997E-04		1.836E-04		4.035E-04		3.732E-04		5.532E-05		7.799E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.563E-04		-2.310E-04		-4.126E-04		-3.929E-04		-1.410E-04		-5.972E-05	
RESIDUAL							2.140E-03		1.936E-03		3.697E-03		3.744E-03		1.370E-02		1.380E-03	
849.	0.36	.002391	12.00	-9.74	5.58	0.0	4.678E-06	3.57E-07	-1.430E-05	5.76E-06	-2.858E-04	2.05E-05	-5.127E-06	-3.20E-06	1.791E-02	7.41E-05	1.527E-03	8.43E-06
850.	0.36	.002390	12.00	-10.02	6.20	0.0	-2.479E-04	-1.48E-05	-2.065E-04	-1.43E-05	-7.579E-04	1.35E-05	-3.576E-04	-4.15E-05	1.773E-02	9.50E-05	1.396E-03	-4.08E-05
849.	0.36	.002386	12.00	-10.03	7.29	0.0	-4.673E-04	-6.23E-06	-3.868E-04	-6.93E-06	-1.159E-03	-2.90E-05	-7.311E-04	-2.17E-05	1.750E-02	-1.90E-06	1.309E-03	1.26E-05
849.	0.36	.002386	12.00	-10.45	7.97	0.0	-7.458E-04	1.67E-05	-5.805E-04	1.07E-05	-1.726E-03	1.33E-05	-1.055E-03	3.33E-05	1.725E-02	1.17E-05	1.228E-03	2.13E-05
848.	0.36	.002386	12.00	-9.62	4.72	0.0	2.381E-04	1.02E-05	1.509E-04	2.29E-06	7.547E-05	-7.26E-06	3.866E-04	4.18E-05	1.794E-02	-4.74E-05	1.634E-03	4.86E-06
850.	0.36	.002386	12.00	-9.78	3.37	0.0	3.989E-04	-4.07E-05	3.250E-04	-1.08E-05	2.927E-04	-6.44E-05	7.622E-04	-8.04E-06	1.796E-02	-1.07E-04	1.774E-03	-2.88E-05
850.	0.36	.002386	12.00	-9.65	2.64	0.0	6.734E-04	3.43E-05	4.974E-04	9.03E-06	7.566E-04	4.68E-05	1.073E-03	-4.38E-07	1.834E-02	1.31E-04	1.935E-03	3.68E-05
STANDARD DEVIATIONS								2.55E-05		1.29E-05		4.48E-05		3.56E-05		1.07E-04		3.37E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.959E-04		2.378E-04		9.565E-04		3.361E-04		4.632E-04		4.537E-06	
LATERAL CYCLIC PITCH DERIVATIVES							-2.038E-04		-1.670E-04		-3.166E-04		-3.555E-04		-1.124E-04		-1.290E-04	
RESIDUAL							4.998E-03		3.224E-03		1.078E-02		5.255E-03		2.297E-02		2.282E-03	

TABLE A-I. CONCLUDED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
852.	0.35	.002384	4.05	-2.63	2.30	0.0	-1.106E-06	-1.36E-05	2.184E-06	1.31E-05	-1.948E-04	-5.29E-05	6.378E-05	1.14E-05	6.572E-03	6.01E-05	3.204E-04	-8.95E-06
854.	0.36	.002383	6.04	-2.83	2.51	0.0	5.674E-04	1.58E-05	-1.361E-04	-9.95E-06	8.132E-04	4.01E-05	-1.963E-04	-7.15E-06	1.169E-02	1.38E-05	2.605E-04	1.60E-05
852.	0.36	.002384	7.04	-2.81	2.72	0.0	8.184E-04	-5.44E-05	-2.126E-04	5.03E-06	1.269E-03	-2.25E-05	-2.838E-04	-2.18E-06	1.397E-02	3.13E-05	2.839E-04	-4.89E-05
849.	0.36	.002383	8.02	-2.87	2.87	0.0	1.198E-03	3.92E-05	-2.907E-04	-3.54E-06	1.782E-03	1.53E-05	-3.892E-04	1.75E-06	1.629E-02	3.55E-05	3.744E-04	3.56E-05
850.	0.35	.002380	2.09	-2.33	2.00	0.0	-4.846E-04	4.54E-06	1.056E-04	-2.57E-06	-1.052E-03	1.01E-05	3.359E-04	-2.01E-06	2.327E-03	2.40E-05	4.501E-04	3.65E-06
852.	0.36	.002375	0.16	-2.28	1.98	0.0	-1.029E-03	5.50E-06	1.953E-04	-3.30E-06	-1.881E-03	1.33E-05	4.907E-04	-2.44E-06	-2.409E-03	2.33E-05	5.039E-04	4.77E-06
STANDARD DEVIATIONS								5.06E-05		1.28E-05		5.21E-05		9.96E-06		5.98E-05		4.49E-05
COLLECTIVE PITCH DERIVATIVES							2.928E-04		-4.616E-05		4.335E-04		-6.893E-05		2.457E-03		-8.728E-06	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.812E-04		-9.601E-05		1.611E-04		3.734E-04		-1.023E-04		7.439E-04	
LATERAL CYCLIC PITCH DERIVATIVES							1.299E-04		-2.022E-04		3.911E-04		-1.378E-04		-7.858E-04		3.907E-04	
RESIDUAL							-4.708E-04		3.882E-04		-2.372E-03		1.628E-03		-1.500E-03		1.420E-03	
850.	0.36	.002382	8.02	-6.16	3.48	0.0	-1.167E-05	-7.37E-06	-6.239E-06	-4.94E-06	-2.138E-04	3.10E-05	7.342E-05	1.84E-05	1.261E-02	-5.48E-05	6.363E-04	-4.26E-05
851.	0.36	.002381	10.02	-6.13	4.16	0.0	6.539E-04	5.44E-06	-1.492E-04	-1.43E-06	8.435E-04	5.51E-06	-1.523E-04	1.48E-05	1.742E-02	-8.62E-05	9.071E-04	-2.46E-05
850.	0.36	.002378	11.03	-6.12	4.25	0.0	9.068E-04	-3.75E-05	-2.411E-04	-5.02E-07	1.251E-03	-6.58E-05	-2.190E-04	1.92E-05	1.569E-02	-1.17E-04	1.110E-03	-1.26E-04
850.	0.36	.002380	12.02	-6.34	4.14	0.0	1.274E-03	3.49E-05	-2.559E-04	1.05E-06	1.850E-03	6.72E-05	-3.426E-04	-2.79E-05	2.198E-02	-6.46E-05	1.399E-03	1.40E-04
851.	0.36	.002372	8.01	-6.17	3.52	0.0	-2.032E-05	-1.55E-05	5.639E-07	2.94E-06	-2.890E-04	-5.17E-05	3.920E-05	-1.02E-05	1.248E-02	-1.93E-04	6.498E-04	1.79E-06
850.	0.36	.002371	7.02	-5.97	3.51	0.0	-2.912E-04	1.72E-05	5.363E-05	3.47E-06	-7.279E-04	2.19E-06	1.191E-04	-2.08E-05	1.041E-02	4.36E-05	5.799E-04	-7.07E-05
850.	0.36	.002371	6.03	-5.93	3.19	0.0	-6.474E-04	-7.11E-06	1.202E-04	-8.83E-07	-1.299E-03	-1.91E-05	2.775E-04	1.89E-05	7.811E-03	-1.23E-04	5.946E-04	-2.55E-05
850.	0.36	.002369	5.06	-5.66	3.50	0.0	-8.964E-04	1.08E-05	1.553E-04	-5.12E-07	-1.650E-03	3.84E-05	2.927E-04	-1.37E-05	5.732E-03	-1.07E-04	6.202E-04	9.22E-05
STANDARD DEVIATIONS								2.58E-05		3.52E-06		5.99E-05		2.64E-05		1.53E-04		1.14E-04
COLLECTIVE PITCH DERIVATIVES							2.809E-04		-5.712E-05		4.488E-04		-5.731E-05		2.217E-03		3.352E-04	
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.480E-04		-2.231E-05		-2.411E-04		1.705E-04		-5.398E-04		1.716E-03	
LATERAL CYCLIC PITCH DERIVATIVES							1.428E-04		-4.722E-05		2.873E-04		-1.670E-04		6.409E-04		-6.889E-04	
RESIDUAL							-3.667E-03		4.839E-04		-6.332E-03		2.147E-03		-1.068E-02		1.097E-02	
849.	0.36	.002336	4.00	-2.21	1.79	0.07	4.851E-06	-5.75E-06	-2.708E-05	-1.06E-05	-2.517E-04	-1.38E-05	2.299E-04	-2.78E-06	7.481E-03	8.22E-05	2.915E-04	5.28E-06
849.	0.36	.002336	4.00	-2.20	1.84	1.16	1.260E-04	8.87E-06	-1.083E-05	1.04E-05	-4.539E-05	1.44E-05	2.361E-04	2.32E-05	8.717E-03	-1.00E-05	2.067E-04	-1.74E-05
850.	0.36	.002339	4.00	-2.25	1.79	3.10	3.117E-04	-4.18E-06	-3.539E-06	7.67E-07	2.965E-04	-1.50E-05	2.362E-04	-2.33E-05	1.106E-02	8.82E-05	5.085E-05	3.51E-05
850.	0.36	.002339	4.00	-2.10	1.94	5.28	5.537E-04	4.92E-06	-1.381E-05	-2.41E-06	7.257E-04	1.56E-05	2.222E-04	1.29E-05	1.365E-02	-4.24E-05	-9.125E-05	-2.39E-05
850.	0.36	.002337	4.00	-2.11	1.71	-0.90	-4.263E-05	-1.06E-05	8.397E-06	2.69E-06	-3.368E-04	-2.67E-05	2.949E-04	7.99E-06	6.410E-03	1.66E-04	3.514E-04	2.15E-05
850.	0.36	.002336	4.00	-2.18	1.62	-2.85	-2.198E-04	1.03E-05	8.659E-06	-1.10E-06	-6.338E-04	2.11E-05	2.932E-04	-2.31E-05	3.766E-03	-8.89E-05	4.375E-04	2.16E-06
850.	0.36	.002338	4.00	-2.36	1.34	-4.97	-4.336E-04	5.39E-07	4.201E-05	3.35E-07	-9.761E-04	3.15E-06	4.592E-04	1.62E-05	1.150E-03	2.57E-05	4.135E-04	-1.30E-05
STANDARD DEVIATIONS								1.20E-05		8.85E-06		2.60E-05		2.66E-05		1.32E-04		3.04E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.281E-04		1.051E-04		5.997E-04		1.650E-04		3.166E-04		7.027E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.670E-04		-2.222E-04		-6.580E-04		-6.404E-04		6.180E-04		6.505E-04	
ROTOR PITCH DERIVATIVES							1.033E-04		5.291E-06		1.885E-04		1.084E-05		1.181E-03		-8.830E-05	
RESIDUAL							1.211E-03		6.135E-04		2.254E-03		1.743E-03		6.914E-03		-7.169E-04	
850.	0.36	.002315	8.00	-7.32	3.12	0.07	2.697E-05	-5.57E-06	-5.454E-06	-2.42E-06	-6.509E-04	6.71E-08	-5.322E-05	3.62E-06	1.269E-02	-8.20E-05	7.772E-04	-6.40E-06
850.	0.36	.002313	8.00	-6.86	4.02	1.15	1.181E-04	5.13E-07	-7.159E-06	2.33E-05	-4.976E-04	-1.18E-05	-1.174E-04	3.88E-05	1.367E-02	-1.39E-04	7.405E-04	-9.48E-06
849.	0.36	.002313	8.00	-6.82	4.41	3.12	2.993E-04	-1.41E-05	-4.473E-05	-6.57E-06	-2.057E-04	-5.10E-06	-1.922E-04	5.79E-06	1.593E-02	-5.37E-05	6.933E-04	-5.17E-06
845.	0.36	.002313	8.00	-6.96	4.01	5.26	5.200E-04	5.36E-06	-4.762E-05	-4.77E-06	2.102E-04	1.63E-05	-1.978E-04	-1.41E-05	1.861E-02	2.85E-05	6.729E-04	5.29E-06
848.	0.36	.002315	8.00	-6.94	3.83	-0.88	-6.003E-05	1.23E-05	-1.671E-05	2.08E-06	-8.045E-04	2.10E-05	-1.320E-04	-1.16E-05	1.157E-02	8.15E-05	8.060E-04	1.38E-05
847.	0.37	.002317	8.00	-6.73	3.86	-2.86	-2.677E-04	1.52E-05	-3.792E-05	-1.58E-05	-1.088E-03	2.66E-05	-1.656E-04	-4.08E-05	9.157E-03	2.32E-05	8.328E-04	-7.22E-06
850.	0.36	.002318	8.00	-6.68	3.65	-4.96	-5.097E-04	-1.41E-05	-1.315E-05	4.94E-06	-1.434E-03	-8.13E-06	-7.731E-05	2.32E-05	6.637E-03	-7.98E-05	8.929E-04	1.09E-06
STANDARD DEVIATIONS								1.68E-05		1.73E-05		2.35E-05		3.69E-05		1.28E-04		1.19E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.239E-04		-6.052E-05		2.803E-04		-1.026E-04		-2.661E-04		5.728E-05	
LATERAL CYCLIC PITCH DERIVATIVES							4.401E-05		5.850E-06		-1.655E-04		-4.769E-05		-1.087E-04		-4.381E-05	
ROTOR PITCH DERIVATIVES							9.394E-05		-4.430E-06		1.721E-04		-9.271E-06		1.158E-03		-1.883E-05	
RESIDUAL							-1.018E-03		-4.804E-04		1.904E-03		-6.583E-04		1.108E-02		1.341E-03	

TABLE A-II. CONFIGURATION 1, ROTOR STEADY STATE RESPONSE DATA.

RPM	μ	ρ	θ_o	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
802.	0.0	.002373	0.00	0.06	-0.15	0.0	-4.630E-06	-2.49E-05	-1.169E-05	-4.45E-05	2.294E-05	-1.01E-05	-8.638E-06	-3.91E-05	-3.362E-04	3.59E-05	5.623E-04	-3.23E-05
811.	0.0	.002373	0.00	0.73	-0.28	0.0	-1.947E-06	-3.09E-05	-6.049E-05	2.70E-05	1.484E-05	-3.81E-05	-1.663E-04	1.03E-06	-2.861E-04	8.67E-05	5.556E-04	-3.76E-05
803.	0.0	.002373	-0.00	1.67	-0.37	0.0	2.715E-05	-2.34E-05	-2.013E-04	8.16E-05	1.155E-06	-7.25E-05	-4.066E-04	6.05E-05	-3.504E-04	1.98E-05	5.606E-04	-3.13E-05
806.	0.0	.002373	-0.00	2.57	-0.24	0.0	6.689E-05	-2.80E-05	-4.278E-04	1.17E-04	2.071E-05	-5.68E-05	-7.110E-04	1.13E-04	-3.853E-04	-2.56E-05	5.673E-04	-2.45E-05
802.	0.0	.002373	-0.00	3.41	-0.59	0.0	1.118E-04	2.76E-05	-6.878E-04	-6.14E-05	1.669E-04	5.01E-05	-1.048E-03	-4.08E-05	-4.176E-04	-4.96E-05	6.042E-04	1.51E-05
806.	0.0	.002373	-0.00	4.31	0.13	0.0	1.681E-04	-2.57E-05	-9.654E-04	1.25E-04	-2.443E-06	-7.82E-05	-1.436E-03	1.15E-04	-3.959E-04	-6.11E-05	6.191E-04	2.69E-05
804.	0.0	.002373	-0.01	5.23	-0.35	0.0	2.301E-04	5.85E-05	-1.265E-03	-1.17E-04	2.357E-04	1.10E-04	-1.837E-03	-1.15E-04	-3.666E-04	-1.92E-05	6.590E-04	7.04E-05
807.	0.0	.002373	-0.00	-0.47	0.09	0.0	1.233E-05	-1.66E-05	4.190E-05	-3.57E-05	-2.868E-06	-9.90E-06	1.470E-04	8.05E-06	-2.742E-04	9.21E-05	5.585E-04	-3.80E-05
806.	0.0	.002373	-0.01	-1.34	0.16	0.0	1.905E-05	1.15E-05	1.723E-04	-9.22E-05	4.250E-05	5.41E-05	3.501E-04	-7.33E-05	-3.351E-04	3.38E-05	5.633E-04	-3.43E-05
806.	0.0	.002373	-0.00	-2.26	0.23	0.0	3.816E-06	1.55E-05	3.543E-04	-1.09E-04	2.193E-05	5.25E-05	6.020E-04	-1.22E-04	-3.262E-04	4.59E-05	5.744E-04	-2.45E-05
806.	0.0	.002373	0.0	-3.10	0.27	0.0	-1.439E-05	2.47E-05	6.312E-04	-1.99E-05	-1.157E-05	3.50E-05	9.691E-04	-3.62E-05	-4.012E-04	-2.56E-05	6.006E-04	6.85E-07
802.	0.0	.002373	0.00	-4.00	0.12	0.0	-7.336E-05	1.22E-05	9.309E-04	1.21E-05	-3.997E-05	8.83E-06	1.370E-03	3.14E-06	-4.329E-04	-4.60E-05	6.329E-04	3.30E-05
800.	0.0	.002373	0.00	-4.92	0.10	0.0	-1.235E-04	-4.56E-06	1.266E-03	1.16E-04	-1.055E-04	-4.46E-05	1.823E-03	1.25E-04	-4.808E-04	-8.71E-05	6.771E-04	7.64E-05
STANDARD DEVIATIONS								3.05E-05		9.59E-05		6.31E-05		9.14E-05		6.21E-05		4.48E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							3.346E-05		-2.413E-04		1.508E-05		-3.507E-04		6.237E-06		-9.354E-07	
LATERAL CYCLIC PITCH DERIVATIVES							1.096E-04		-3.409E-04		-7.543E-05		-3.152E-04		3.812E-05		5.517E-06	
RESIDUAL							3.525E-05		-6.227E-06		2.059E-05		1.539E-06		-3.666E-04		5.955E-04	
807.	0.0	.002373	1.01	0.02	-0.03	0.0	-2.259E-06	-2.43E-05	1.964E-06	-1.41E-06	1.358E-05	-9.27E-06	-1.277E-05	-1.78E-05	-1.835E-04	-2.89E-04	5.552E-04	-4.00E-05
804.	0.0	.002373	1.00	0.71	-0.28	0.0	1.228E-05	2.11E-06	-8.832E-05	-4.57E-05	3.069E-05	2.79E-05	-2.265E-04	-9.26E-05	-7.915E-05	-1.86E-04	5.574E-04	-3.59E-05
804.	0.0	.002373	1.00	1.65	-0.40	0.0	2.888E-05	-3.55E-06	-2.320E-04	1.37E-05	-1.023E-05	-3.83E-05	-4.316E-04	1.31E-05	2.985E-05	-8.97E-05	5.643E-04	-2.81E-05
804.	0.0	.002373	1.00	2.57	-0.50	0.0	5.772E-05	1.18E-07	-4.616E-04	-3.83E-06	6.685E-05	9.54E-06	-7.407E-04	2.09E-05	1.553E-04	2.23E-05	5.795E-04	-1.20E-05
802.	0.0	.002373	1.00	3.32	-0.48	0.0	9.374E-05	-1.57E-06	-6.883E-04	5.50E-06	1.003E-04	-4.33E-06	-1.047E-03	2.78E-05	2.510E-04	1.02E-04	5.972E-04	5.60E-06
801.	0.0	.002373	1.00	4.22	-0.39	0.0	1.495E-04	-1.86E-06	-9.866E-04	2.88E-05	1.742E-04	-2.06E-06	-1.463E-03	1.95E-05	3.139E-04	1.43E-04	6.240E-04	3.20E-05
799.	0.0	.002373	1.00	5.10	-0.40	0.0	2.187E-04	3.00E-05	-1.287E-03	-1.96E-05	2.592E-04	3.67E-05	-1.862E-03	-3.41E-05	3.547E-04	2.07E-04	6.584E-04	6.66E-05
802.	0.0	.002373	1.00	-0.43	0.14	0.0	-8.716E-06	-4.04E-05	7.814E-05	5.21E-05	-3.377E-05	-7.23E-05	1.885E-04	9.94E-05	-1.626E-04	-2.68E-04	5.611E-04	-3.54E-05
803.	0.0	.002373	0.99	-1.26	0.27	0.0	7.241E-06	-5.63E-06	1.927E-04	4.75E-06	9.930E-06	-1.30E-05	3.850E-04	3.61E-05	-4.881E-05	-1.44E-04	5.588E-04	-3.87E-05
802.	0.0	.002373	0.99	-2.18	0.34	0.0	6.171E-06	1.88E-05	3.662E-04	-4.89E-05	2.356E-05	3.59E-05	6.133E-04	-6.44E-05	9.657E-05	1.56E-05	5.725E-04	-2.56E-05
802.	0.0	.002373	1.00	-3.06	0.39	0.0	-3.802E-05	6.70E-06	6.160E-04	-3.09E-05	-3.789E-05	1.34E-05	9.384E-04	-6.70E-05	1.548E-04	8.89E-05	5.961E-04	-2.53E-06
802.	0.0	.002373	1.00	-3.89	0.39	0.0	-7.041E-05	1.09E-05	9.176E-04	2.86E-05	-9.441E-05	2.26E-06	1.354E-03	1.93E-05	2.097E-04	1.60E-04	6.319E-04	3.31E-05
799.	0.0	.002373	1.00	-4.80	0.31	0.0	-1.240E-04	1.27E-05	1.227E-03	1.70E-05	-1.537E-04	1.35E-05	1.785E-03	3.99E-05	2.660E-04	2.38E-04	6.793E-04	8.10E-05
STANDARD DEVIATIONS								1.58E-05		3.28E-05		3.29E-05		5.80E-05		1.96E-04		4.51E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							4.557E-05		-2.571E-04		5.670E-05		-4.018E-04		1.575E-05		-1.505E-07	
LATERAL CYCLIC PITCH DERIVATIVES							1.746E-04		-6.436E-04		2.385E-04		-5.618E-04		4.596E-05		7.006E-06	
RESIDUAL							2.714E-05		-1.316E-05		2.994E-05		-6.797E-06		1.070E-04		5.954E-04	
800.	0.0	.002373	1.99	0.06	-0.05	0.0	1.749E-05	-7.27E-06	-1.242E-06	1.30E-05	3.112E-05	-5.30E-07	-3.459E-05	-2.37E-05	1.866E-04	-4.68E-04	5.658E-04	-4.26E-05
800.	0.0	.002373	1.99	0.70	-0.25	0.0	6.666E-05	2.41E-05	-1.641E-04	-4.10E-05	6.483E-05	2.23E-05	-3.363E-04	-1.05E-04	1.743E-04	-5.72E-04	5.639E-04	-5.81E-05
801.	0.0	.002373	1.99	1.58	-0.40	0.0	6.213E-05	-1.02E-05	-3.376E-04	-1.54E-05	5.714E-05	-1.92E-05	-5.713E-04	-2.26E-05	3.983E-04	-3.52E-04	5.753E-04	-5.07E-05
801.	0.0	.002373	2.04	2.52	-0.41	0.0	8.638E-05	-2.38E-05	-5.163E-04	7.37E-05	6.711E-05	-6.63E-05	-8.070E-04	9.55E-05	7.604E-04	1.41E-05	6.017E-04	-1.23E-05
800.	0.0	.002373	1.98	3.34	-0.47	0.0	1.021E-04	-3.51E-05	-7.445E-04	6.01E-05	1.212E-04	-5.49E-05	-1.124E-03	8.16E-05	9.862E-04	2.47E-04	6.189E-04	9.86E-06
799.	0.0	.002373	1.98	4.14	-0.56	0.0	1.827E-04	1.26E-05	-1.034E-03	-3.13E-05	2.616E-04	4.83E-05	-1.511E-03	-1.30E-05	1.061E-03	3.10E-04	6.426E-04	3.50E-05
800.	0.0	.002373	1.98	5.07	-0.57	0.0	2.558E-04	4.85E-05	-1.332E-03	-6.62E-05	3.488E-04	7.91E-05	-1.915E-03	-7.01E-05	1.224E-03	5.18E-04	6.785E-04	8.29E-05
803.	0.0	.002373	1.99	-0.44	0.13	0.0	-2.487E-05	-3.66E-05	1.196E-04	5.54E-05	-6.003E-05	-8.52E-05	2.463E-04	8.93E-05	1.630E-04	-3.53E-04	5.563E-04	-4.04E-05
803.	0.0	.002373	1.98	-1.22	0.23	0.0	-3.748E-05	-2.13E-05	2.959E-04	4.26E-05	-2.950E-05	-2.03E-05	5.179E-04	7.43E-05	2.587E-04	-2.96E-04	5.650E-04	-3.13E-05
803.	0.0	.002373	1.99	-2.07	0.39	0.0	-3.723E-05	6.85E-06	4.153E-04	-2.26E-05	-3.694E-05	2.31E-06	6.765E-04	-6.92E-05	5.077E-04	5.44E-06	5.825E-04	-8.15E-06
803.	0.0	.002373	1.99	-3.03	0.33	0.0	-4.945E-05	3.62E-05	6.653E-04	-7.25E-05	-3.344E-05	7.44E-05	1.026E-03	-8.72E-05	7.834E-04	1.91E-04	6.159E-04	4.98E-06
802.	0.0	.002373	1.99	-3.82	0.36	0.0	-9.438E-05	2.23E-05	9.152E-04	-4.03E-05	-1.219E-04	3.09E-05	1.376E-03	-3.46E-05	9.616E-04	3.47E-04	6.499E-04	3.15E-05
803.	0.0	.002373	1.99	-4.80	0.40	0.0	-1.672E-04	-1.24E-05	1.267E-03	4.44E-05	-2.184E-04	-1.07E-05	1.859E-03	8.42E-05	1.129E-03	4.87E-04	7.067E-04	7.93E-05
STANDARD DEVIATIONS								3.02E-05		5.54E-05		5.58E-05		8.19E-05		4.20E-04		5.11E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							4.072E-05		-2.888E-04		6.228E-05		-3.776E-04		-5.335E-05		-1.390E-05	
LATERAL CYCLIC PITCH DERIVATIVES							4.069E-05		-3.708E-04		1.405E-04		-1.078E-04		-6.056E-04		-1.079E-04	
RESIDUAL							2.426E-05		-1.456E-05		3.451E-05		6.083E-06		6.297E-04		6.043E-04	

TABLE A-II. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
805.	0.0	.002373	2.98	0.04	-0.03	0.0	1.867E-05	-5.51E-06	-1.017E-05	-5.56E-06	4.125E-05	1.89E-05	-4.427E-05	-5.67E-05	8.279E-04	-4.39E-04	5.865E-04	-5.35E-05
804.	0.0	.002373	2.98	0.62	-0.27	0.0	9.712E-05	5.74E-06	-2.200E-04	-3.15E-05	1.303E-04	1.80E-05	-4.181E-04	-7.67E-05	8.584E-04	-5.21E-04	5.886E-04	-5.93E-05
804.	0.0	.002373	2.98	1.52	-0.38	0.0	1.497E-04	1.63E-05	-4.609E-04	-2.60E-05	1.665E-04	-3.84E-06	-7.569E-04	-4.28E-05	9.193E-04	-5.11E-04	5.968E-04	-5.19E-05
802.	0.0	.002373	2.98	3.26	-0.40	0.0	1.912E-04	5.28E-06	-8.514E-04	3.06E-05	1.937E-04	-3.23E-05	-1.295E-03	2.17E-05	1.506E-03	6.10E-05	6.452E-04	2.75E-06
801.	0.0	.002373	2.98	4.14	-0.58	0.0	1.968E-04	-4.84E-05	-1.050E-03	4.17E-05	2.782E-04	-2.72E-05	-1.606E-03	1.21E-04	1.520E-03	3.91E-04	6.838E-04	3.73E-05
799.	0.0	.002373	2.98	5.09	-0.47	0.0	2.859E-04	3.68E-05	-1.385E-03	-2.70E-05	3.485E-04	5.15E-05	-2.022E-03	-4.68E-05	2.156E-03	6.77E-04	7.228E-04	8.52E-05
804.	0.0	.002373	2.98	-0.47	0.11	0.0	-3.605E-05	-2.04E-05	1.522E-04	7.72E-06	-6.987E-05	-3.77E-05	3.005E-04	3.04E-05	7.811E-04	-4.24E-04	5.924E-04	-4.41E-05
804.	0.0	.002373	2.98	-1.23	0.22	0.0	-7.377E-05	-1.58E-05	3.607E-04	6.70E-06	-1.146E-04	-2.79E-05	6.154E-04	1.86E-05	8.635E-04	-2.90E-04	6.007E-04	-3.42E-05
802.	0.0	.002373	2.99	-3.00	0.25	0.0	-9.010E-05	2.30E-05	7.846E-04	-2.69E-05	-9.425E-05	5.16E-05	1.198E-03	-1.73E-05	1.337E-03	2.02E-04	6.528E-04	1.18E-05
800.	0.0	.002373	2.99	-4.79	0.33	0.0	-1.750E-04	-1.05E-06	1.309E-03	3.02E-05	-2.312E-04	-1.10E-05	1.917E-03	4.87E-05	1.549E-03	8.55E-04	7.508E-04	1.06E-04
STANDARD DEVIATIONS								2.75E-05		3.13E-05		3.80E-05		6.78E-05		5.83E-04		6.78E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							2.764E-05		-2.549E-04		2.801E-05		-3.365E-04		2.480E-06		-4.161E-06	
LATERAL CYCLIC PITCH DERIVATIVES							-1.940E-04		1.474E-04		-3.030E-04		6.518E-04		-4.542E-04		-4.251E-05	
RESIDUAL							1.786E-05		5.315E-06		1.308E-05		4.316E-05		1.255E-03		6.390E-04	
802.	0.0	.002373	4.00	0.76	-0.24	0.0	1.479E-04	3.01E-06	-2.812E-04	8.26E-06	1.707E-04	1.75E-05	-4.948E-04	-3.35E-05	1.408E-03	-3.95E-04	6.596E-04	-6.96E-05
802.	0.0	.002373	4.00	1.66	-0.28	0.0	2.132E-04	1.18E-06	-5.788E-04	-1.46E-05	1.925E-04	-2.57E-05	-9.076E-04	-2.95E-05	1.440E-03	-4.43E-04	6.703E-04	-6.01E-05
802.	0.0	.002373	4.01	2.55	-0.27	0.0	2.632E-04	4.04E-06	-8.345E-04	-1.57E-05	2.580E-04	6.27E-07	-1.253E-03	-6.05E-06	1.545E-03	-3.39E-04	6.913E-04	-3.52E-05
801.	0.0	.002373	4.00	3.42	-0.15	0.0	3.059E-04	3.54E-05	-1.058E-03	-1.79E-05	2.773E-04	2.68E-05	-1.592E-03	-5.74E-05	1.651E-03	1.10E-04	7.198E-04	6.56E-06
801.	0.0	.002373	4.01	4.23	-0.21	0.0	3.180E-04	-2.11E-05	-1.283E-03	1.30E-05	2.898E-04	-2.94E-05	-1.869E-03	6.01E-05	2.173E-03	3.28E-04	7.554E-04	3.91E-05
797.	0.0	.002373	4.01	5.21	-0.08	0.0	3.346E-04	-1.78E-05	-1.516E-03	2.90E-05	3.322E-04	2.00E-05	-2.207E-03	4.68E-05	2.275E-03	5.87E-04	7.953E-04	9.38E-05
804.	0.0	.002373	4.01	-0.53	0.09	0.0	-3.808E-05	2.34E-06	1.571E-04	-2.37E-05	-8.009E-05	-2.46E-05	3.065E-04	-2.27E-05	9.569E-04	-3.70E-04	6.567E-04	-4.71E-05
802.	0.0	.002373	4.01	-1.38	0.15	0.0	-9.897E-05	1.16E-05	4.382E-04	-7.72E-06	-1.197E-04	5.88E-06	7.273E-04	-5.47E-06	1.066E-03	-1.58E-04	6.687E-04	-3.23E-05
800.	0.0	.002373	4.01	-3.16	0.06	0.0	-1.999E-04	-1.60E-05	9.555E-04	1.97E-05	-1.787E-04	-2.03E-06	1.446E-03	1.33E-05	1.351E-03	4.22E-05	7.268E-04	1.22E-05
798.	0.0	.002373	4.01	-5.02	-0.19	0.0	-2.116E-04	-2.66E-06	1.423E-03	9.58E-06	-1.518E-04	1.09E-05	2.089E-03	3.88E-05	2.247E-03	6.38E-04	8.355E-04	9.27E-05
STANDARD DEVIATIONS								1.87E-05		2.06E-05		2.30E-05		4.38E-05		4.63E-04		6.77E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							5.854E-05		-2.922E-04		5.119E-05		-4.285E-04		2.276E-05		-3.047E-06	
LATERAL CYCLIC PITCH DERIVATIVES							-3.300E-04		2.738E-04		-4.297E-04		7.066E-04		-1.350E-03		-8.873E-05	
RESIDUAL							2.060E-05		-1.825E-07		1.056E-05		3.634E-05		1.460E-03		7.102E-04	
803.	0.0	.002373	6.04	0.01	-0.01	0.0	4.800E-05	5.43E-06	-5.754E-05	-1.95E-05	5.113E-05	1.93E-05	-8.170E-05	-7.22E-05	3.229E-03	-3.30E-04	8.032E-04	-5.60E-05
801.	0.0	.002373	6.03	0.73	-0.28	0.0	2.073E-04	5.67E-06	-3.481E-04	-2.09E-06	2.804E-04	4.88E-06	-5.708E-04	-2.54E-05	3.407E-03	-3.05E-04	8.158E-04	-7.86E-05
801.	0.0	.002373	6.04	1.68	-0.31	0.0	3.283E-04	1.70E-05	-6.983E-04	-4.87E-06	4.039E-04	7.47E-06	-1.096E-03	-3.66E-05	3.334E-03	-3.97E-04	8.155E-04	-7.77E-05
801.	0.0	.002373	6.03	3.50	-0.25	0.0	5.052E-04	1.56E-05	-1.356E-03	-1.66E-05	5.846E-04	2.55E-05	-2.008E-03	-3.42E-05	3.633E-03	-7.51E-05	8.647E-04	-9.59E-06
799.	0.0	.002373	6.04	4.40	-0.20	0.0	5.586E-04	-5.88E-06	-1.657E-03	5.36E-06	6.276E-04	-5.25E-06	-2.401E-03	2.18E-05	3.849E-03	1.60E-04	9.048E-04	4.16E-05
798.	0.0	.002373	6.04	5.30	-0.16	0.0	6.292E-04	-2.16E-05	-1.952E-03	3.07E-05	6.822E-04	-2.32E-05	-2.781E-03	8.94E-05	4.227E-03	5.57E-04	9.579E-04	1.06E-04
802.	0.0	.002373	6.04	-0.47	0.12	0.0	-7.421E-05	-2.28E-05	1.279E-04	-3.11E-05	-1.401E-04	-4.59E-05	2.804E-04	-3.50E-05	3.362E-03	-1.29E-04	8.110E-04	-3.35E-05
802.	0.0	.002373	6.04	-1.41	0.11	0.0	-1.501E-04	3.12E-07	4.850E-04	-8.96E-06	-1.856E-04	1.02E-05	8.010E-04	-3.55E-06	3.424E-03	-6.35E-05	8.333E-04	-1.67E-05
801.	0.0	.002373	6.05	-3.29	0.06	0.0	-2.994E-04	3.42E-05	1.223E-03	5.27E-05	-3.297E-04	4.00E-05	1.818E-03	5.55E-05	3.655E-03	1.47E-04	9.020E-04	3.37E-05
799.	0.0	.002373	6.05	-4.98	-0.22	0.0	-4.601E-04	-3.19E-05	1.732E-03	-5.58E-06	-4.249E-04	-3.31E-05	2.526E-03	3.85E-05	4.081E-03	4.35E-04	1.008E-03	9.07E-05
STANDARD DEVIATIONS								2.41E-05		2.80E-05		3.06E-05		5.76E-05		3.65E-04		7.48E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.069E-04		-3.627E-04		1.104E-04		-5.245E-04		5.655E-06		-5.432E-06	
LATERAL CYCLIC PITCH DERIVATIVES							-3.107E-04		1.676E-04		-5.924E-04		5.695E-04		-5.355E-04		-1.415E-04	
RESIDUAL							3.531E-05		-3.233E-05		2.680E-05		7.404E-07		3.556E-03		8.584E-04	
801.	0.0	.002373	8.06	0.05	-0.01	0.0	7.755E-05	-2.03E-05	-8.914E-05	-1.46E-05	9.985E-05	1.59E-05	-1.501E-04	-6.78E-05	6.044E-03	-1.44E-04	1.054E-03	-4.31E-05
801.	0.0	.002373	8.07	0.94	-0.30	0.0	2.906E-04	-4.41E-05	-4.236E-04	2.00E-05	4.265E-04	-2.95E-05	-6.954E-04	4.22E-05	6.143E-03	-1.40E-04	1.060E-03	-6.12E-05
800.	0.0	.002373	8.07	1.66	-0.28	0.0	4.645E-04	2.58E-06	-8.585E-04	-3.51E-05	5.463E-04	-3.68E-05	-1.340E-03	-5.73E-05	6.182E-03	-6.17E-05	1.072E-03	-2.39E-05
800.	0.0	.002373	8.06	2.80	-0.30	0.0	6.110E-04	1.06E-05	-1.155E-03	1.45E-05	7.620E-04	2.78E-05	-1.797E-03	5.02E-05	6.242E-03	2.57E-05	1.086E-03	1.21E-05
801.	0.0	.002373	8.07	3.64	-0.12	0.0	6.881E-04	3.66E-05	-1.546E-03	8.16E-06	7.366E-04	2.73E-05	-2.289E-03	-1.77E-05	6.338E-03	2.32E-04	1.115E-03	9.17E-05
805.	0.0	.002373	8.07	-0.47	0.13	0.0	-3.950E-05	-7.66E-06	1.608E-04	1.89E-05	-1.263E-04	-1.21E-05	3.637E-04	7.19E-05	6.127E-03	-1.61E-05	1.070E-03	-1.73E-05
803.	0.0	.002373	8.07	-1.38	0.15	0.0	-1.745E-04	-2.74E-06	4.632E-04	-5.45E-05	-2.661E-04	5.51E-06	7.954E-04	-5.16E-05	6.347E-03	-1.81E-05	1.087E-03	-1.90E-05
803.	0.0	.002373	8.07	-3.17	0.06	0.0	-3.957E-04	-4.58E-06	1.317E-03	6.68E-05	-4.985E-04	-3.70E-05	1.928E-03	5.79E-05	6.229E-03	-4.03E-05	1.172E-03	5.58E-06
801.	0.0	.002373	8.08	-5.07	-0.12	0.0	-5.646E-04	2.92E-05	2.007E-03	-2.41E-05	-5.569E-04	3.89E-05	2.898E-03	-2.17E-05	6.579E-03	1.63E-04	1.300E-03	5.53E-05
STANDARD DEVIATIONS								2.82E-05		4.18E-05		3.43E-05		6.38E-05		1.46E-04		5.55E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.433E-04		-4.117E-04		1.504E-04		-5.971E-04		-3.534E-05		-2.537E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-3.879E-04		1.369E-05		-8.433E-04		4.440E-04		-4.450E-04		-1.653E-04	
RESIDUAL							8.490E-05		-5.375E-05		6.375E-05		-4.581E-05		6.183E-03		1.096E-03	

TABLE A-II. CONTINUED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
799.	0.0	.002373	10.08	0.03	-0.01	0.0	9.427E-05	2.06E-05	-1.429E-04	-1.90E-05	1.170E-04	6.85E-05	-2.194E-04	-1.20E-04	9.370E-03	-2.85E-05	1.435E-03	-1.79E-05
802.	0.0	.002373	10.08	0.90	-0.27	0.0	3.451E-04	-7.42E-06	-4.858E-04	-1.63E-05	4.569E-04	-3.19E-06	-8.129E-04	-6.50E-05	9.536E-03	-3.58E-05	1.435E-03	-5.30E-05
803.	0.0	.002373	10.08	1.86	-0.36	0.0	5.539E-04	1.05E-05	-8.986E-04	-1.44E-05	7.059E-04	5.22E-06	-1.396E-03	-2.19E-05	9.611E-03	1.45E-05	1.435E-03	-3.18E-05
802.	0.0	.002373	10.08	3.78	-0.38	0.0	8.383E-04	-4.50E-06	-1.659E-03	3.53E-05	1.025E-03	-7.74E-06	-2.470E-03	9.07E-05	9.554E-03	2.59E-05	1.463E-03	8.10E-05
802.	0.0	.002373	10.08	-0.34	0.02	0.0	8.066E-06	1.08E-05	4.284E-05	4.81E-06	-8.689E-05	-3.81E-05	2.127E-04	6.55E-05	9.347E-03	-3.98E-05	1.440E-03	-1.99E-05
802.	0.0	.002373	10.09	-1.29	0.13	0.0	-2.125E-04	-6.53E-06	4.565E-04	1.21E-05	-3.196E-04	-6.43E-06	7.949E-04	1.68E-05	9.383E-03	4.02E-05	1.485E-03	1.12E-05
801.	0.0	.002373	10.09	-3.21	0.04	0.0	-5.058E-04	-6.08E-05	1.267E-03	-4.43E-05	-5.834E-04	-4.89E-05	1.907E-03	-1.00E-05	9.532E-03	3.47E-05	1.572E-03	-1.71E-05
801.	0.0	.002373	10.09	-5.17	0.08	0.0	-7.269E-04	3.77E-05	2.217E-03	4.18E-05	-8.679E-04	3.06E-05	3.182E-03	4.40E-05	9.536E-03	-1.12E-05	1.716E-03	4.76E-05
STANDARD DEVIATIONS								3.43E-05		3.45E-05		4.39E-05		8.24E-05		3.88E-05		5.25E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.512E-04		-4.449E-04		1.637E-04		-6.148E-04		-4.309E-05		-4.665E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-5.577E-04		-1.518E-04		-1.018E-03		4.365E-04		-7.563E-04		-2.852E-04	
RESIDUAL							6.325E-05		-1.112E-04		3.300E-05		-7.513E-05		9.392E-03		1.451E-03	
800.	0.0	.002373	12.10	0.01	-0.13	0.0	1.910E-04	-6.28E-06	-2.040E-04	-8.58E-05	3.274E-04	8.04E-05	-3.191E-04	-1.82E-04	1.275E-02	-5.77E-05	1.904E-03	-3.78E-05
800.	0.0	.002373	12.11	0.89	-0.31	0.0	4.061E-04	-7.15E-06	-5.423E-04	-2.48E-05	5.582E-04	8.36E-06	-9.156E-04	-9.21E-05	1.290E-02	7.20E-05	1.902E-03	-3.73E-05
801.	0.0	.002373	12.11	1.93	-0.42	0.0	6.396E-04	1.21E-06	-9.461E-04	3.91E-05	8.005E-04	-3.63E-05	-1.523E-03	4.98E-05	1.294E-02	8.20E-05	1.888E-03	-2.81E-05
801.	0.0	.002373	12.11	3.83	-0.36	0.0	9.815E-04	1.15E-05	-1.817E-03	1.93E-05	1.179E-03	1.06E-05	-2.690E-03	8.97E-05	1.276E-02	-1.18E-04	1.894E-03	7.14E-05
802.	0.0	.002373	12.10	-0.35	0.02	0.0	7.369E-05	-5.59E-06	3.606E-05	-1.33E-05	-1.860E-05	-8.16E-05	2.031E-04	5.00E-06	1.281E-02	3.00E-05	1.517E-03	-1.10E-05
802.	0.0	.002373	12.11	-1.29	0.07	0.0	-8.058E-05	2.50E-05	5.375E-04	6.93E-05	-1.287E-04	3.43E-05	9.175E-04	7.41E-05	1.278E-02	1.52E-05	1.970E-03	1.32E-05
800.	0.0	.002373	12.10	-3.20	-0.07	0.0	-4.588E-04	-4.43E-05	1.293E-03	-3.09E-05	-4.594E-04	-2.26E-05	2.023E-03	1.56E-05	1.282E-02	6.80E-05	2.058E-03	-9.71E-06
800.	0.0	.002373	12.11	-5.19	-0.10	0.0	-7.389E-04	2.95E-05	2.240E-03	2.72E-05	-7.949E-04	6.96E-06	3.324E-03	4.02E-05	1.263E-02	-9.19E-05	2.200E-03	3.93E-05
STANDARD DEVIATIONS								2.15E-05		5.76E-05		5.72E-05		1.09E-04		9.30E-05		4.61E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.839E-04		-4.483E-04		1.974E-04		-6.542E-04		1.469E-05		-4.322E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-3.101E-04		2.563E-05		-7.413E-04		6.357E-04		-8.512E-05		-2.008E-04	
RESIDUAL							1.542E-04		-1.102E-04		1.464E-04		-4.556E-05		1.279E-02		1.916E-03	
792.	0.0	.002373	14.13	0.05	-0.03	0.0	2.106E-04	3.66E-05	-1.559E-04	-3.11E-05	3.264E-04	1.42E-04	-2.466E-04	-1.40E-04	1.627E-02	-2.79E-04	2.491E-03	-5.21E-05
790.	0.0	.002373	14.14	0.93	-0.38	0.0	4.524E-04	-1.50E-05	-6.134E-04	-2.32E-05	7.022E-04	-9.94E-06	-9.752E-04	-3.32E-05	1.669E-02	4.48E-05	2.508E-03	-2.96E-05
802.	0.0	.002373	14.14	1.96	-0.50	0.0	6.615E-04	-3.16E-06	-1.013E-03	3.99E-05	9.720E-04	-3.12E-05	-1.560E-03	5.44E-05	1.666E-02	6.14E-05	2.474E-03	-2.70E-05
801.	0.0	.002373	14.14	2.99	-0.57	0.0	8.227E-04	-1.08E-05	-1.520E-03	-1.78E-05	1.208E-03	-3.51E-05	-2.265E-03	-2.74E-05	1.658E-02	4.30E-05	2.463E-03	2.61E-06
799.	0.0	.002373	14.14	3.93	-0.63	0.0	1.000E-03	1.82E-05	-1.903E-03	7.72E-06	1.483E-03	3.31E-05	-2.756E-03	4.07E-05	1.641E-02	-6.53E-05	2.492E-03	7.02E-05
801.	0.0	.002373	14.13	-0.28	0.09	0.0	6.315E-05	-2.39E-06	5.928E-05	1.58E-05	-5.383E-05	-4.75E-05	2.680E-04	6.73E-05	1.664E-02	1.24E-04	2.526E-03	-2.03E-05
801.	0.0	.002373	14.15	-1.27	0.23	0.0	-1.616E-04	-2.80E-05	4.856E-04	-9.01E-06	-3.712E-04	-5.68E-05	8.659E-04	-7.10E-06	1.660E-02	6.65E-05	2.573E-03	-5.04E-06
802.	0.0	.002373	14.14	-2.24	0.30	0.0	-3.019E-04	-5.66E-06	9.359E-04	1.84E-05	-5.523E-04	-1.28E-05	1.485E-03	2.55E-05	1.666E-02	6.15E-05	2.636E-03	2.11E-05
802.	0.0	.002373	14.15	-4.14	0.40	0.0	-5.649E-04	1.82E-05	1.734E-03	-5.65E-07	-9.207E-04	1.86E-05	2.586E-03	1.92E-05	1.668E-02	-5.72E-05	2.736E-03	4.01E-05
STANDARD DEVIATIONS								2.37E-05		2.63E-05		7.01E-05		7.25E-05		1.39E-04		4.43E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							1.234E-04		-4.161E-04		1.477E-04		-5.255E-04		-1.025E-04		-4.735E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-5.488E-04		2.768E-04		-1.155E-03		1.083E-03		-5.424E-04		-1.045E-04	
RESIDUAL							1.494E-04		-9.936E-05		1.384E-04		-4.496E-05		1.653E-02		2.542E-03	
789.	0.0	.002373	16.19	0.06	-0.02	0.0	1.518E-04	-1.69E-05	-2.501E-04	-4.33E-05	2.343E-04	2.38E-05	-3.605E-04	-1.53E-04	2.104E-02	2.95E-04	3.228E-03	-4.06E-05
790.	0.0	.002373	16.20	0.93	-0.36	0.0	4.069E-04	-2.03E-05	-6.208E-04	-4.95E-05	6.419E-04	-1.42E-05	-9.191E-04	-1.05E-04	2.090E-02	4.53E-04	3.207E-03	-1.13E-04
789.	0.0	.002373	16.19	2.00	-0.52	0.0	6.935E-04	7.58E-05	-1.057E-03	-3.66E-05	1.057E-03	9.50E-05	-1.554E-03	-3.77E-05	2.053E-02	9.59E-05	3.199E-03	-8.11E-05
800.	0.0	.002373	16.19	2.98	-0.54	0.0	8.010E-04	7.84E-05	-1.466E-03	6.50E-05	1.203E-03	9.14E-05	-2.094E-03	4.16E-05	2.060E-02	-1.04E-05	3.236E-03	4.81E-05
799.	0.0	.002373	16.19	3.97	-0.60	0.0	8.316E-04	-2.01E-05	-1.943E-03	5.64E-05	1.224E-03	-8.22E-05	-2.753E-03	1.84E-05	2.035E-02	-3.71E-04	3.256E-03	1.43E-04
804.	0.0	.002373	16.20	3.85	-0.84	0.0	8.971E-04	-6.80E-05	-1.909E-03	-1.38E-05	1.477E-03	-5.06E-05	-2.645E-03	8.56E-05	2.019E-02	-1.61E-04	3.239E-03	1.14E-05
800.	0.0	.002373	16.19	-0.31	0.07	0.0	3.017E-05	-5.52E-05	-7.419E-05	-2.94E-05	-2.930E-05	-1.01E-04	6.780E-05	2.85E-05	2.089E-02	9.10E-05	3.197E-03	-6.99E-05
799.	0.0	.002373	16.20	-1.24	0.31	0.0	-1.080E-04	2.42E-05	3.677E-04	4.07E-06	-2.344E-04	5.89E-05	7.420E-04	7.47E-05	2.083E-02	-1.32E-04	3.266E-03	5.74E-06
799.	0.0	.002373	16.20	-5.23	0.43	0.0	-5.808E-04	2.13E-06	2.315E-03	4.72E-05	-9.667E-04	-2.14E-05	3.242E-03	4.65E-05	2.005E-02	-2.60E-04	3.711E-03	9.59E-05
STANDARD DEVIATIONS								5.55E-05		5.22E-05		8.32E-05		9.46E-05		3.05E-04		9.84E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							9.757E-05		-4.831E-04		1.342E-04		-6.293E-04		2.057E-04		-1.017E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-5.208E-04		-1.721E-04		-9.862E-04		1.708E-04		1.430E-03		-4.204E-04	
RESIDUAL							1.509E-04		-1.823E-04		1.799E-04		-1.668E-04		2.677E-02		3.264E-03	

TABLE A-II. CONCLUDED.

RPM	μ	ρ	θ_0	θ_s	θ_c	α	$C_{M_{3.3}}/a\sigma$	$\Delta C_{M_{3.3}}/a\sigma$	$C_{L_{3.3}}/a\sigma$	$\Delta C_{L_{3.3}}/a\sigma$	$C_{M_s}/a\sigma$	$\Delta C_{M_s}/a\sigma$	$C_{L_s}/a\sigma$	$\Delta C_{L_s}/a\sigma$	$C_T/a\sigma$	$\Delta C_T/a\sigma$	$C_Q/a\sigma$	$\Delta C_Q/a\sigma$
803.	0.0	.002373	18.21	0.12	-0.04	0.0	1.834E-04	2.72E-05	-2.810E-04	-2.28E-05	3.336E-04	8.71E-05	-3.064E-04	-3.03E-05	2.441E-02	5.67E-04	4.096E-03	-8.14E-05
804.	0.0	.002373	18.20	0.99	-0.40	0.0	3.176E-04	7.41E-06	-7.213E-04	1.94E-05	6.631E-04	6.59E-05	-1.005E-03	2.99E-05	2.420E-02	4.56E-04	4.057E-03	-1.16E-04
803.	0.0	.002373	18.20	2.05	-0.62	0.0	4.153E-04	-2.13E-05	-1.152E-03	3.07E-05	7.860E-04	-6.98E-05	-1.686E-03	3.42E-05	2.395E-02	2.37E-04	4.067E-03	-5.92E-05
805.	0.0	.002373	18.20	4.07	-0.73	0.0	5.937E-04	3.12E-06	-2.022E-03	-3.77E-05	1.083E-03	-2.42E-05	-2.733E-03	-4.66E-05	2.308E-02	-5.31E-04	4.174E-03	1.98E-04
803.	0.0	.002373	18.20	-1.07	0.42	0.0	-6.776E-05	-2.56E-05	3.760E-04	-3.34E-06	-2.284E-04	-2.83E-05	6.923E-04	-2.13E-05	2.429E-02	3.00E-04	4.131E-03	-6.07E-05
801.	0.0	.002373	18.19	-3.31	0.56	0.0	-2.008E-04	2.10E-05	1.322E-03	7.17E-05	-5.169E-04	-1.37E-05	1.946E-03	1.27E-04	2.345E-02	-2.42E-04	4.357E-03	5.34E-06
805.	0.0	.002373	18.20	-5.30	0.69	0.0	-3.928E-04	-1.18E-05	1.964E-03	-5.80E-05	-7.889E-04	-1.70E-05	2.708E-03	-9.25E-05	2.300E-02	-4.27E-04	4.607E-03	1.14E-04
STANDARD DEVIATIONS								2.50E-05		5.43E-05		6.83E-05		8.69E-05		6.75E-04		1.41E-04
LONGITUDINAL CYCLIC PITCH DERIVATIVES							6.230E-05		-3.584E-04		8.568E-05		-4.240E-04		1.864E-04		-8.374E-05	
LATERAL CYCLIC PITCH DERIVATIVES							-2.728E-04		4.623E-04		-7.570E-04		1.065E-03		8.210E-04		-1.884E-04	
RESIDUAL							1.388E-04		-1.968E-04		2.084E-04		-1.867E-04		2.385E-02		4.180E-03	
807.	0.0	.002373	20.26	0.07	-0.04	0.0	-2.673E-05	-9.44E-05	-3.566E-04	-6.61E-05	7.175E-05	-3.84E-05	-5.154E-04	-1.75E-04	2.675E-02	3.63E-04	5.180E-03	-1.53E-04
805.	0.0	.002373	20.26	1.00	-0.38	0.0	1.151E-04	-1.28E-05	-6.760E-04	-5.27E-05	3.657E-04	3.63E-05	-9.957E-04	-1.06E-04	2.713E-02	9.10E-04	5.232E-03	-1.70E-04
803.	0.0	.002373	20.26	2.04	-0.54	0.0	1.475E-04	1.59E-05	-1.108E-03	-8.56E-05	4.089E-04	-6.64E-05	-1.633E-03	-1.62E-04	2.661E-02	2.73E-04	5.219E-03	-1.30E-04
801.	0.0	.002373	20.26	3.29	-0.63	0.0	1.452E-04	3.54E-05	-1.391E-03	1.23E-04	6.327E-04	2.98E-05	-2.003E-03	1.48E-04	2.636E-02	-2.50E-04	5.325E-03	1.02E-04
799.	0.0	.002373	20.26	4.30	-0.87	0.0	1.481E-04	1.37E-05	-1.645E-03	4.53E-05	8.112E-04	2.79E-05	-2.575E-03	1.52E-04	2.575E-02	-8.57E-04	5.442E-03	2.19E-04
807.	0.0	.002373	20.26	-1.28	0.35	0.0	4.324E-05	3.37E-05	1.928E-04	-1.38E-05	-1.550E-04	7.93E-06	4.629E-04	1.86E-05	2.650E-02	2.26E-05	5.307E-03	1.42E-05
805.	0.0	.002373	20.26	-3.43	0.36	0.0	2.298E-05	-7.22E-05	1.304E-03	-6.32E-05	-3.659E-04	-4.84E-05	1.590E-03	1.01E-06	2.614E-02	3.16E-04	5.489E-03	-1.04E-04
799.	0.0	.002373	20.26	-5.30	0.66	0.0	1.611E-04	7.67E-05	1.855E-03	1.13E-04	-5.344E-04	5.13E-05	2.757E-03	1.25E-04	2.487E-02	-7.78E-04	5.901E-03	2.21E-04
STANDARD DEVIATIONS								6.83E-05		9.86E-05		5.27E-05		1.61E-04		7.12E-04		1.94E-04
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-4.156E-05		-4.308E-04		6.905E-05		-5.309E-04		3.119E-04		-1.431E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-2.936E-04		-1.131E-04		-4.625E-04		1.740E-04		1.331E-03		-5.996E-04	
RESIDUAL							5.806E-05		-2.665E-04		8.530E-05		-2.945E-04		2.642E-02		5.317E-03	
806.	0.0	.002373	4.06	0.01	-0.01	0.0	1.924E-05	-4.89E-05	-5.122E-05	-3.69E-05	1.998E-05	-1.38E-04	-7.525E-05	-5.94E-05	2.067E-03	-3.31E-04	6.996E-04	-4.52E-05
806.	0.0	.002373	4.06	0.42	0.49	0.0	-1.361E-04	2.05E-06	-1.882E-04	-1.89E-05	-2.892E-04	-4.20E-06	-2.822E-04	-3.21E-05	2.007E-03	-8.84E-04	6.906E-04	-1.31E-04
806.	0.0	.002373	4.06	0.52	1.39	0.0	-4.361E-04	-1.67E-05	-2.831E-04	-4.47E-05	-7.661E-04	-5.09E-05	-3.673E-04	-2.46E-05	2.105E-03	-7.90E-04	6.985E-04	-1.12E-04
805.	0.0	.002373	4.12	0.65	2.24	0.0	-7.202E-04	-3.62E-05	-3.308E-04	-1.91E-05	-1.182E-03	-4.68E-05	-4.717E-04	-2.87E-05	2.281E-03	-6.54E-04	7.189E-04	-8.73E-05
803.	0.0	.002373	4.07	0.51	3.13	0.0	-9.524E-04	-2.89E-05	-3.626E-04	-6.10E-05	-1.524E-03	-1.03E-04	-4.398E-04	-2.79E-05	2.531E-03	-8.04E-05	7.394E-04	-9.59E-07
803.	0.0	.002373	4.07	0.58	4.07	0.0	-1.194E-03	1.43E-05	-3.482E-04	1.12E-05	-1.870E-03	-2.56E-05	-4.691E-04	1.73E-05	2.523E-03	3.66E-04	7.734E-04	5.43E-05
801.	0.0	.002373	4.07	0.63	5.03	0.0	-1.461E-03	3.39E-05	-3.750E-04	3.63E-05	-2.238E-03	2.53E-05	-4.750E-04	7.63E-05	3.335E-03	8.63E-04	8.017E-04	1.09E-04
800.	0.0	.002373	4.07	0.89	5.89	0.0	-1.751E-03	3.48E-05	-4.628E-04	7.01E-05	-2.611E-03	1.60E-04	-7.125E-04	1.44E-05	3.583E-03	6.74E-04	8.436E-04	1.22E-04
804.	0.0	.002373	4.06	-0.02	-0.55	0.0	2.223E-04	-7.17E-06	9.642E-08	-1.70E-05	4.153E-04	1.93E-05	4.588E-05	2.17E-05	2.066E-03	-3.71E-04	7.095E-04	-4.84E-05
804.	0.0	.002373	4.06	-0.15	-1.37	0.0	4.849E-04	-4.40E-06	8.776E-05	-4.00E-06	8.447E-04	3.60E-05	1.607E-04	3.38E-05	2.092E-03	-2.92E-04	7.296E-04	-3.01E-05
803.	0.0	.002373	4.06	-0.15	-2.23	0.0	7.635E-04	2.24E-05	1.677E-04	4.36E-05	1.250E-03	8.91E-05	1.435E-04	-1.93E-05	2.281E-03	-2.40E-04	7.621E-04	-3.17E-05
804.	0.0	.002373	4.06	-0.28	-3.11	0.0	1.038E-03	2.32E-05	2.127E-04	1.37E-05	1.618E-03	2.67E-05	2.527E-04	-1.25E-05	2.980E-03	9.69E-05	8.048E-04	6.10E-06
803.	0.0	.002373	4.06	-0.22	-5.04	0.0	1.547E-03	-2.31E-05	2.309E-04	-2.46E-05	2.322E-03	-2.75E-05	2.593E-04	-6.12E-05	3.437E-03	5.81E-04	9.419E-04	5.59E-05
801.	0.0	.002373	4.06	-0.25	-6.55	0.0	2.052E-03	3.69E-05	3.719E-04	5.12E-05	3.022E-03	3.99E-05	4.990E-04	1.02E-04	3.521E-03	8.61E-04	1.079E-03	1.39E-04
STANDARD DEVIATIONS								3.08E-05		4.24E-05		8.20E-05		5.17E-05		6.72E-04		9.33E-05
LONGITUDINAL CYCLIC PITCH DERIVATIVES							-1.455E-04		-3.319E-04		-5.841E-04		-5.195E-04		1.391E-03		2.339E-04	
LATERAL CYCLIC PITCH DERIVATIVES							-2.917E-04		-3.820E-05		-4.087E-04		-4.272E-05		-1.555E-04		-3.894E-05	
RESIDUAL							6.647E-05		-1.140E-05		1.590E-04		-1.113E-05		2.383E-03		7.421E-04	

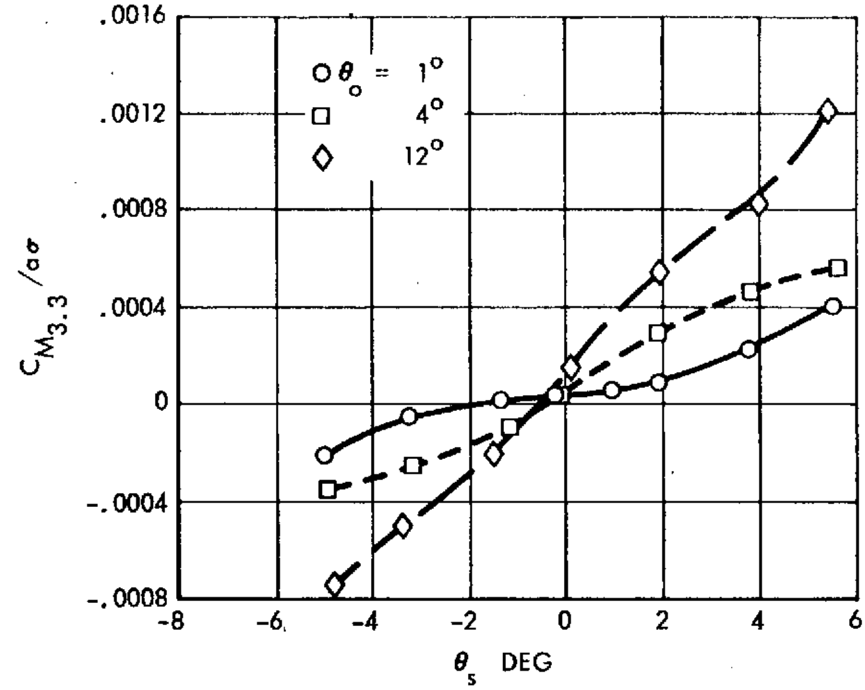

Figure A-1. Configuration 5, Hub Pitch Moment vs. Longitudinal Cyclic Pitch. $\mu = 0$, P = 1.15.

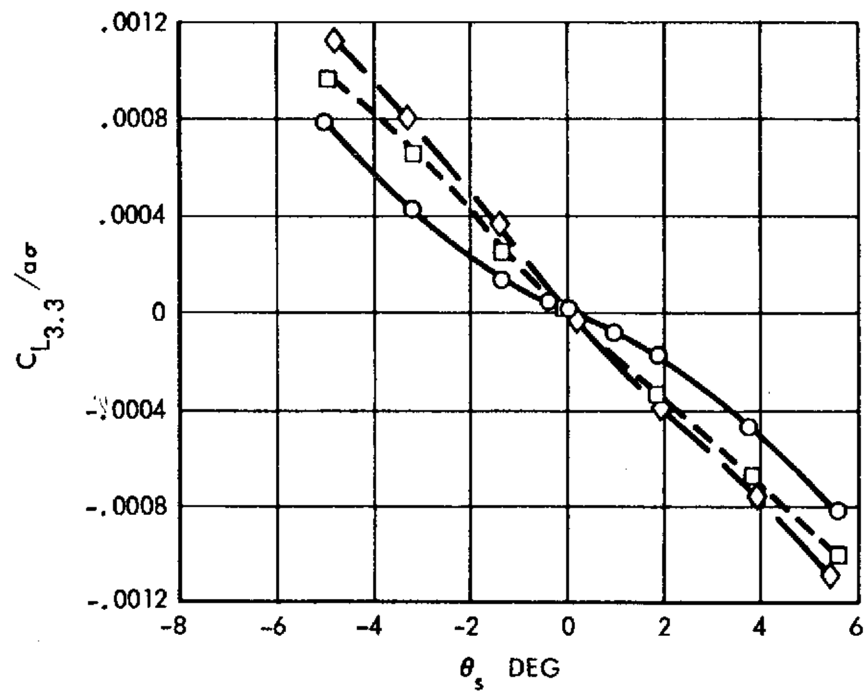

Figure A-2. Configuration 5, Hub Roll Moment vs. Longitudinal Cyclic Pitch. $\mu = 0$, P = 1.15.

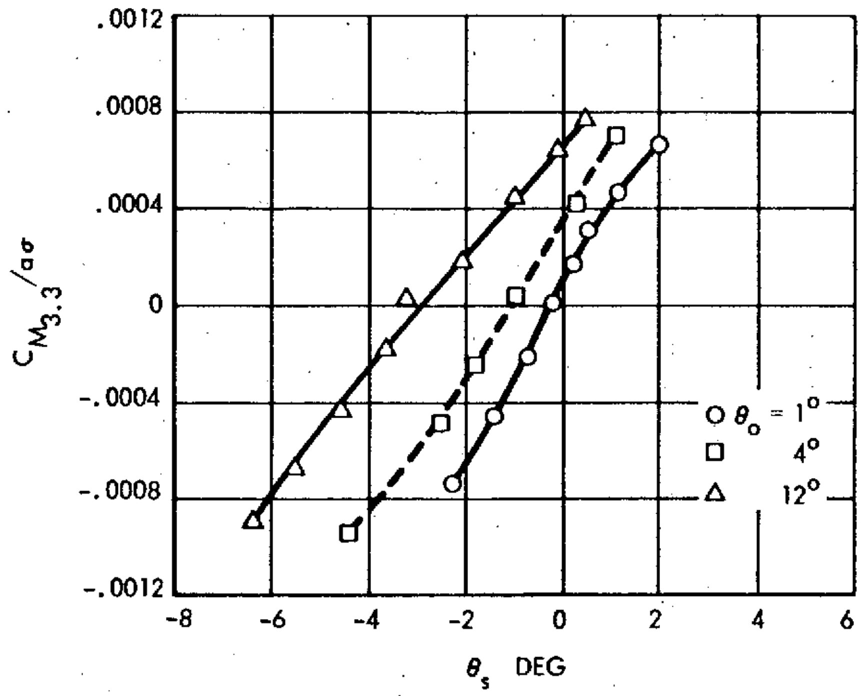

Figure A-3. Configuration 5, Hub Pitch Moment vs. Longitudinal Cyclic Pitch. $\mu = 0.20$, P = 1.15.

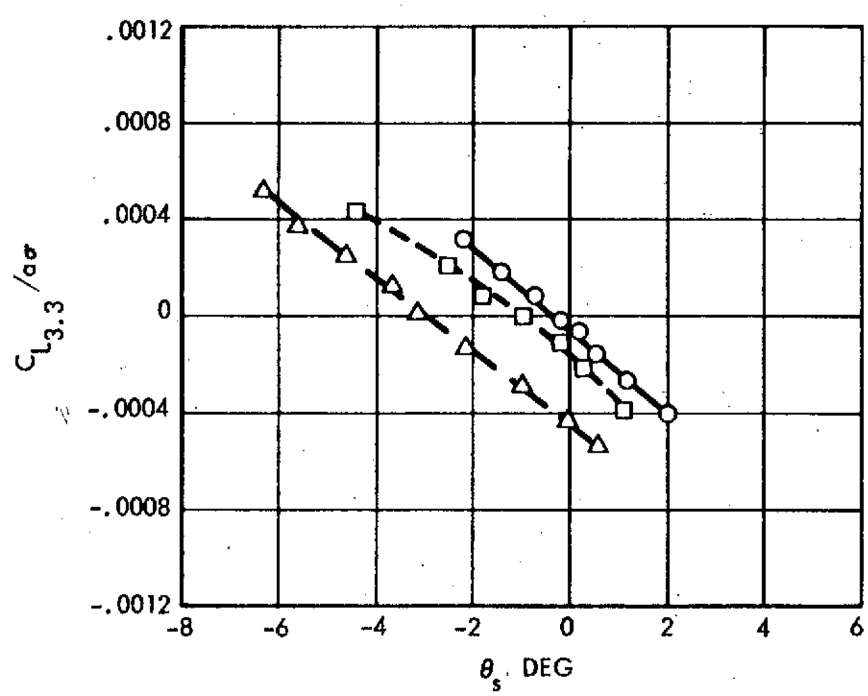

Figure A-4. Configuration 5, Hub Roll Moment vs. Longitudinal Cyclic Pitch. $\mu = 0.20$, P = 1.15.

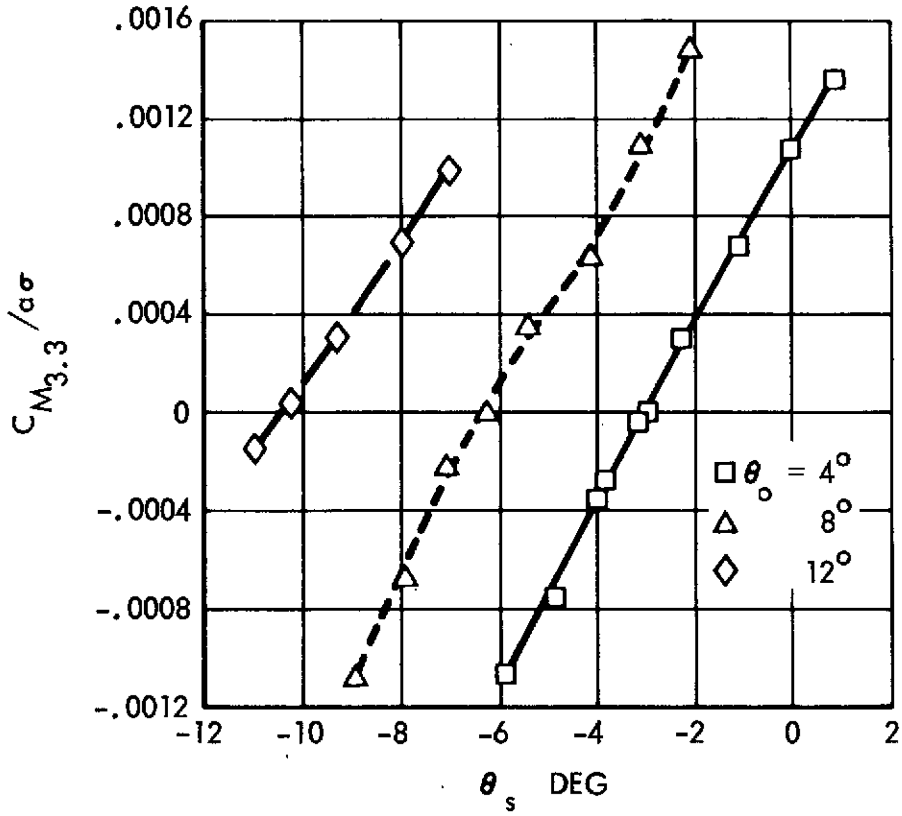

Figure A-5. Configuration 5, Hub Pitch Moment vs. Longitudinal Cyclic Pitch. $\mu = 0.36$, P = 1.15.

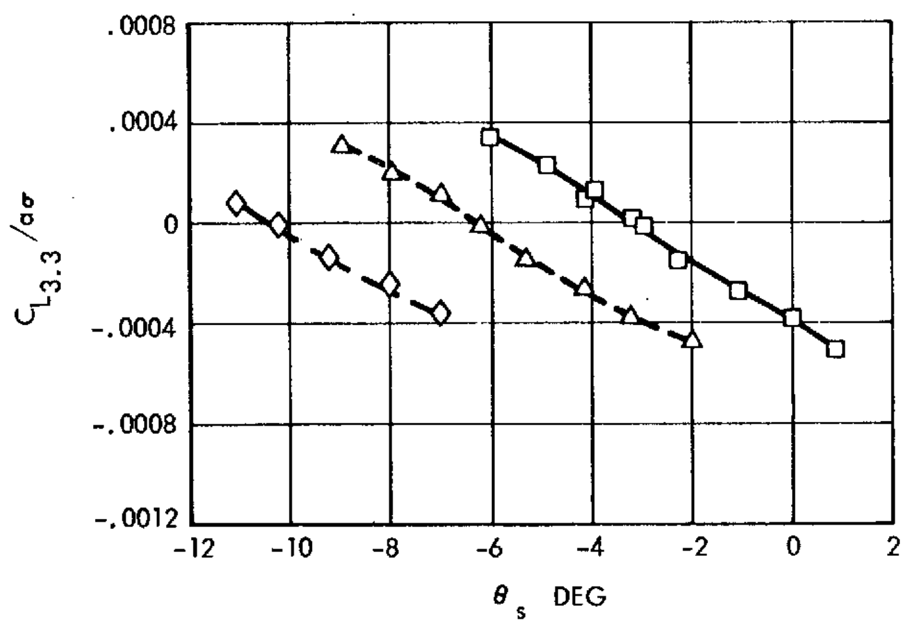

Figure A-6. Configuration 5, Hub Roll Moment vs. Longitudinal Cyclic Pitch. $\mu = 0.36$, P = 1.15.

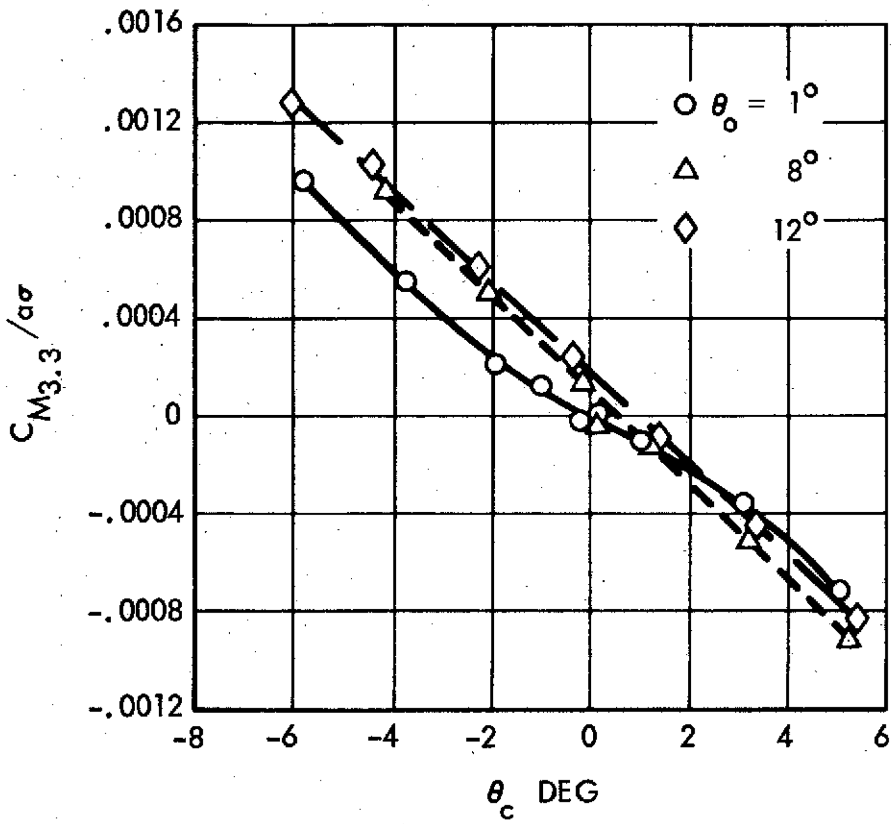

Figure A-7. Configuration 5, Hub Pitch Moment vs. Lateral Cyclic Pitch. $\mu = 0$, P = 1.15.

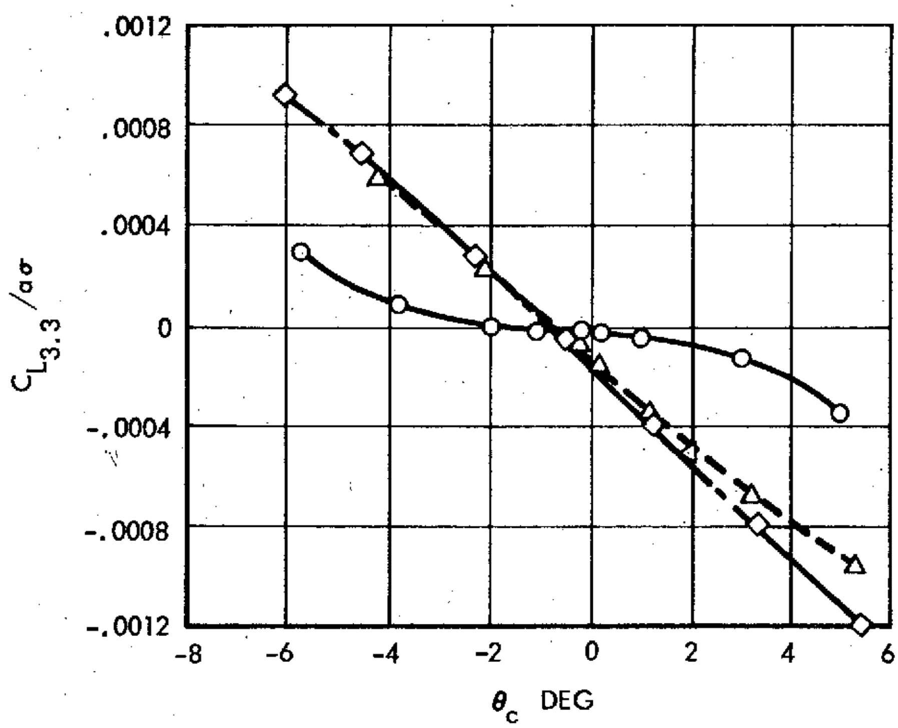

Figure A-8. Configuration 5, Hub Roll Moment vs. Lateral Cyclic Pitch. $\mu = 0$, P = 1.15.

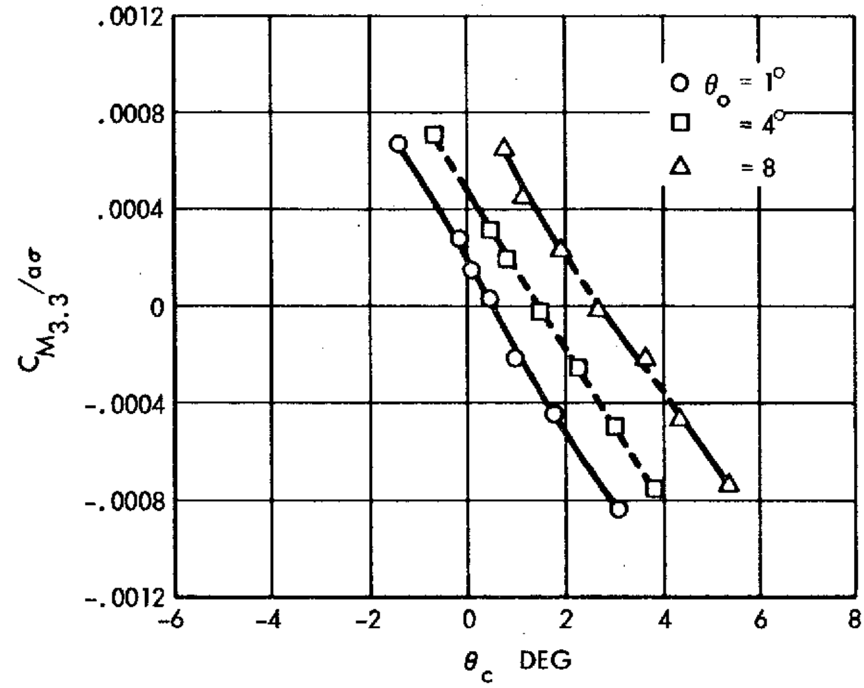

Figure A-9. Configuration 5, Hub Pitch Moment vs. Lateral Cyclic Pitch. $\mu = 0.20$, P = 1.15.

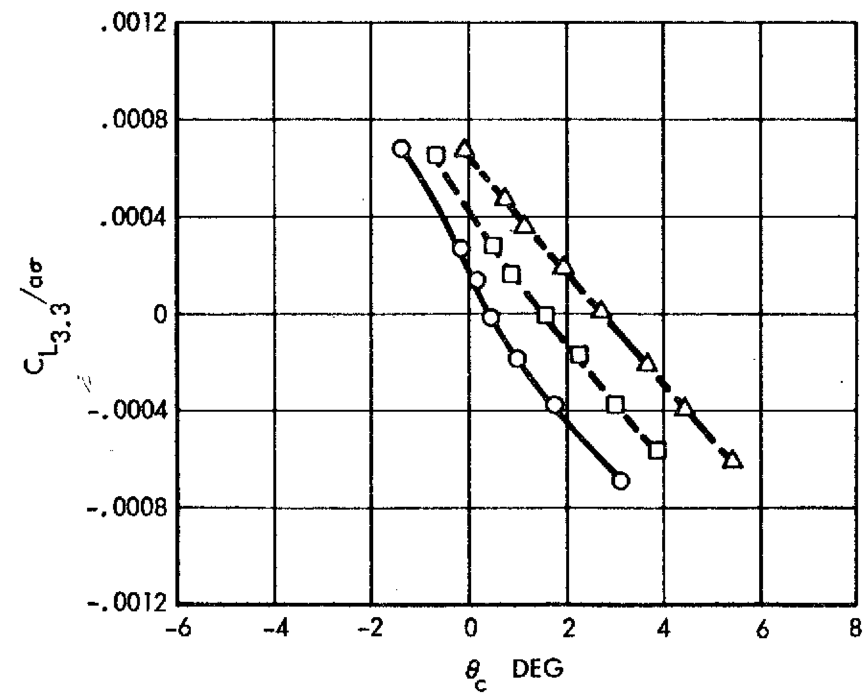

Figure A-10. Configuration 5, Hub Roll Moment vs. Lateral Cyclic Pitch. $\mu = 0.20$, P = 1.15.

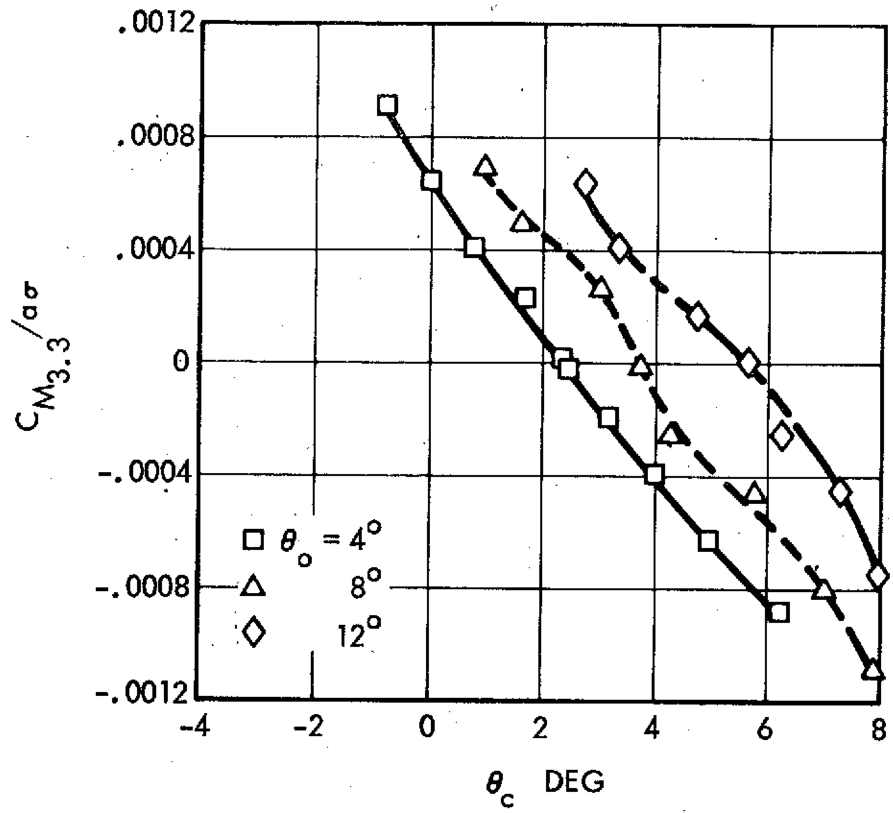

Figure A-11. Configuration 5, Hub Pitch Moment vs. Lateral Cyclic Pitch. $\mu = 0.36$, P = 1.15.

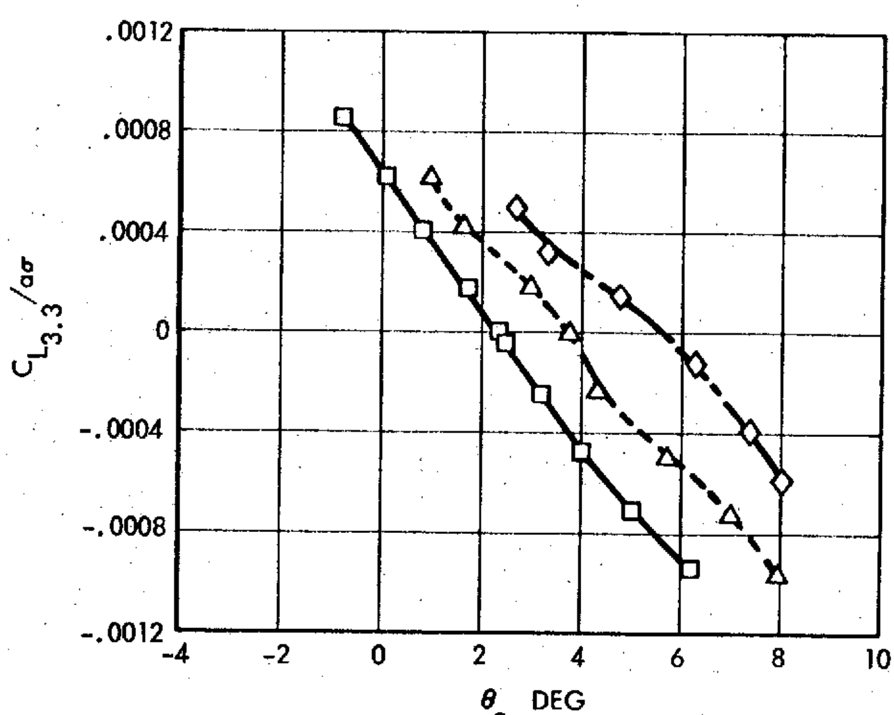

Figure A-12. Configuration 5, Hub Roll Moment vs. Lateral Cyclic Pitch. $\mu = 0.36$, P = 1.15.

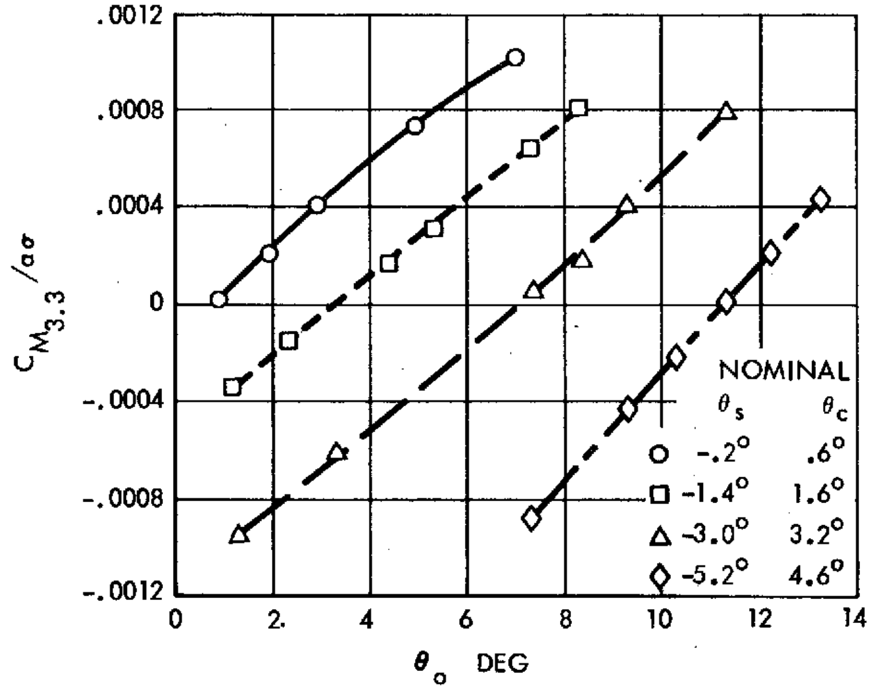

Figure A-13. Configuration 5, Hub Pitch Moment vs. Collective Pitch. $\mu = 0.20$, P = 1.15.

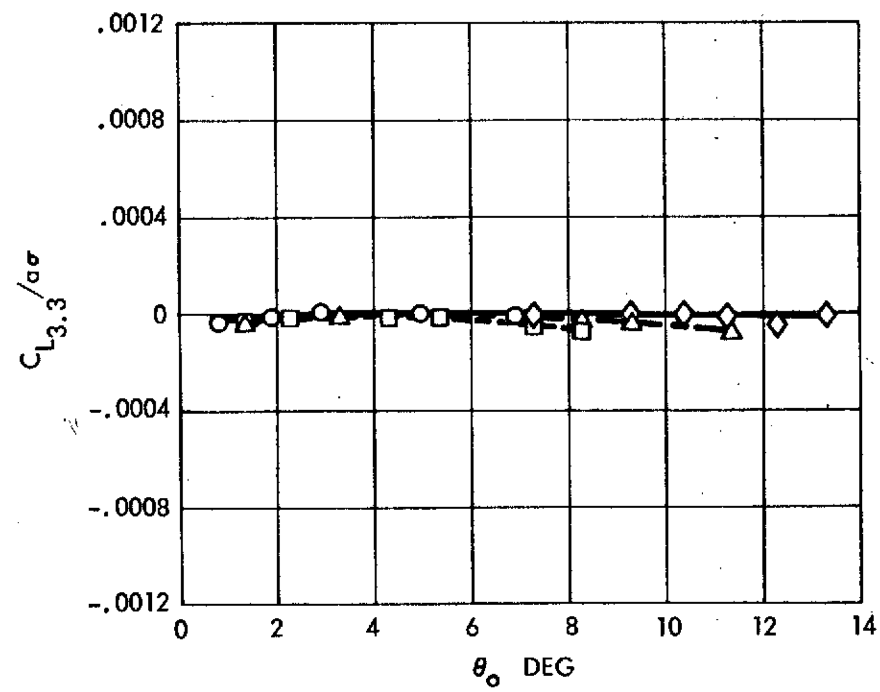

Figure A-14. Configuration 5, Hub Roll Moment vs. Collective Pitch. $\mu = 0.20$, P = 1.15.

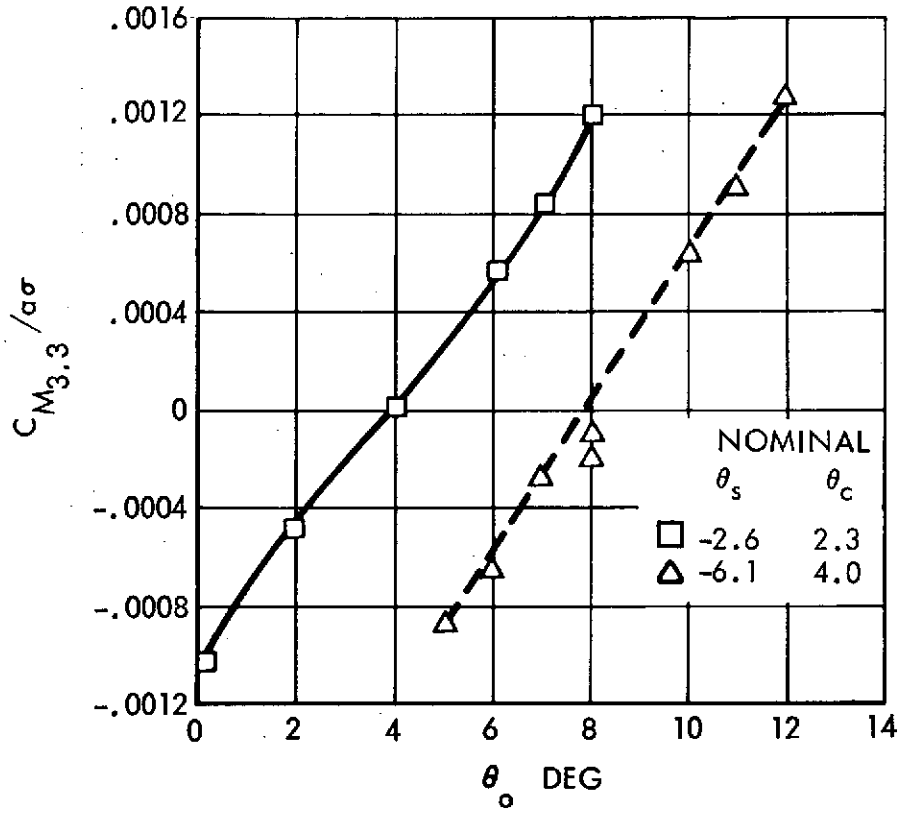

Figure A-15. Configuration 5, Hub Pitch Moment vs. Collective Pitch. $\mu = 0.36$, P = 1.15.

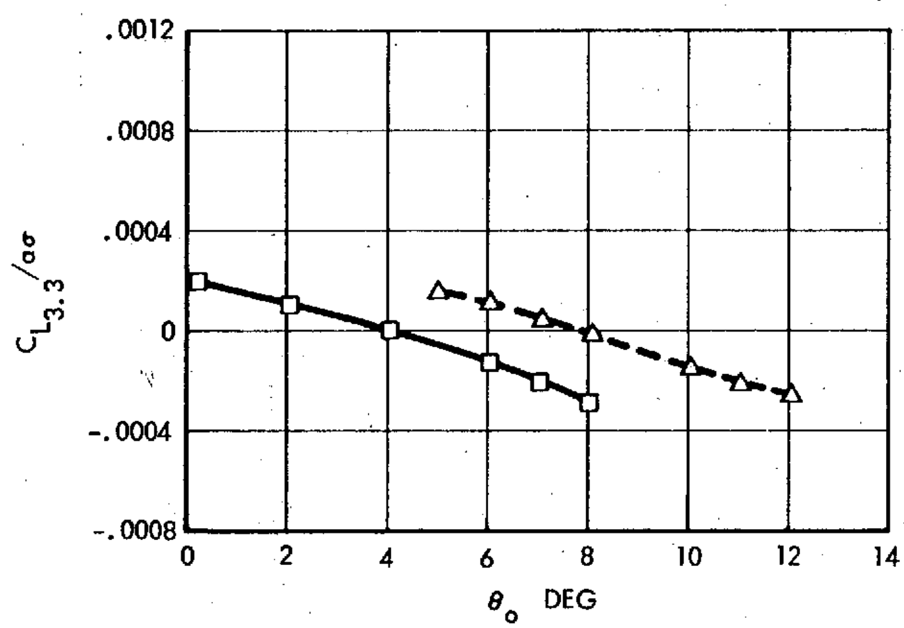

Figure A-16. Configuration 5, Hub Roll Moment vs. Collective Pitch. $\mu = 0.36$, P = 1.15.

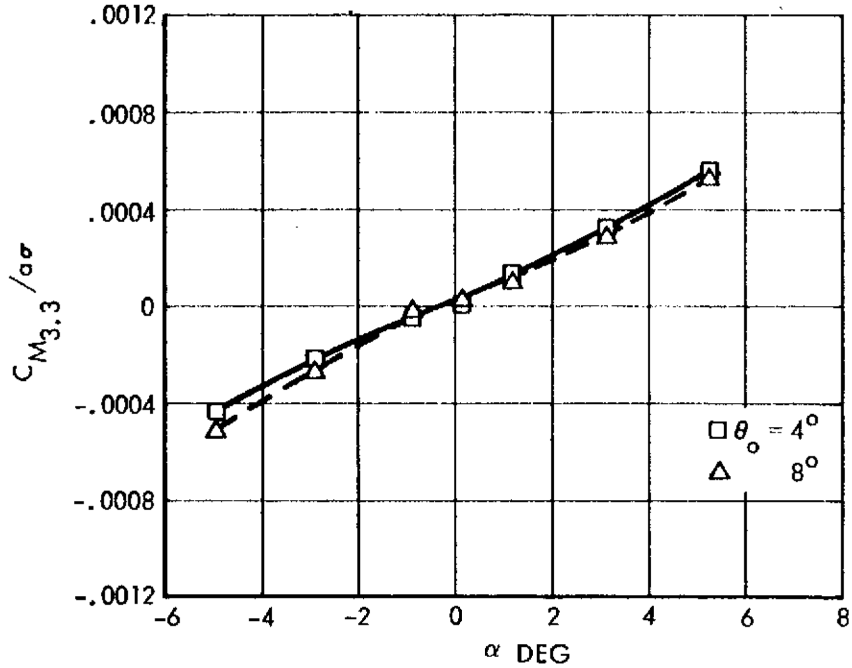

Figure A-17. Configuration 5, Hub Pitch Moment vs. Shaft Pitch. μ = 0.36, P = 1.15.

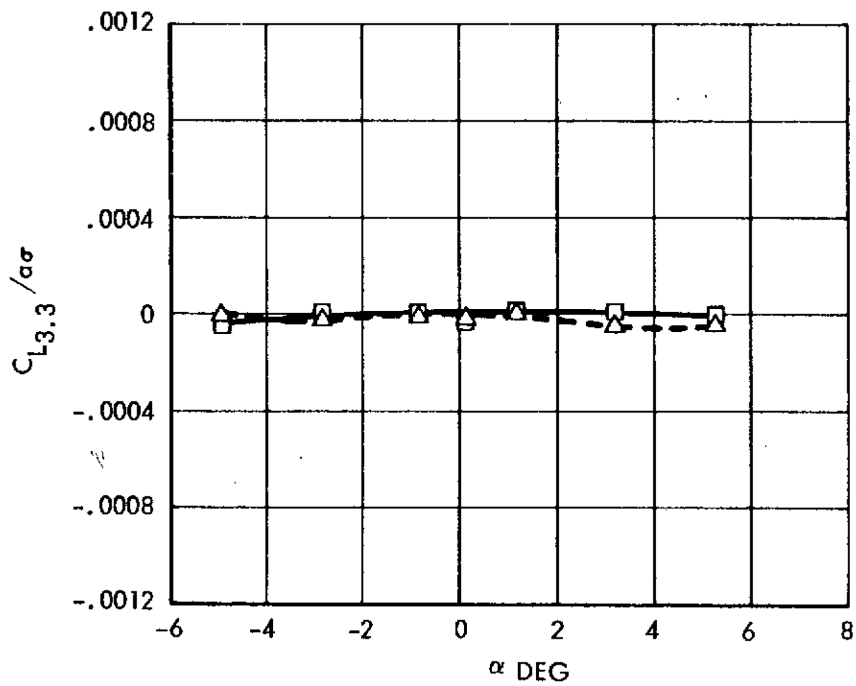

Figure A-18. Configuration 5, Hub Roll Moment vs. Shaft Pitch. μ = 0.36, P = 1.15.

APPENDIX B

ROTOR FREQUENCY RESPONSE DATA

Nondimensionalized frequency response hub moments, factored from measurements at r = 3.3 inches, due to blade cyclics, blade collective, or shaft pitch or roll, are shown in Table B-I. The factors of Table VII were used to transfer the moments to the hub centerline. Configuration 5 only was used. Most of the tests were run at 850 revolutions per minute, with a few in hover at 550 revolutions per minute. In these analyses air density in hover was set at 0.002396 and in forward flight at 0.002361. Evidence of stand resonance appears in some of the plotted data. The phase and magnitude of the transfer function are in degrees and per degree, respectively. The tabulated values fit the equation:

$$\text{Trf. Fcn.} = (\text{Mag.})e^{i(\text{Phs.})}$$

The magnitude and phase of the transfer functions have also been plotted in Figures B-1 through B-80. However, for ease of comparison with similar figures in Reference 3, the magnitudes have been plotted in decibels (dB = 20 $\log_{10}$ (amplitude ratio)), where the amplitude ratio is in in-lb/deg.

The figures are arranged, lowest advance ratio first, as follows:

θ_s inputs - Figures B-1 through B-30.

θ_c inputs - Figures B-31 through B-36.

θ_o inputs - Figures B-37 through B-46.

α inputs - Figures B-47 through B-62.

ϕ inputs - Figures B-63 through B-80.

As in Reference 3 hub centerline pitching and rolling moment coefficients are defined as follows:

$$C_m = k\ C_{M_{3.3}} \quad \text{and} \quad C_l = k\ C_{L_{3.3}}$$

TABLE B-I. CONFIGURATION 5 ROTOR FREQUENCY RESPONSE DATA.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial \theta_s}$ $\frac{1}{Deg.}$ Mag.	Phs.	$\frac{\partial C_l/a\sigma}{\partial \theta_s}$ $\frac{1}{Deg.}$ Mag.	Phs.
850.	0.	0.	1.94	0.022	0.000041	31.99	0.000177	-176.26
			3.18	0.036	0.000066	52.89	0.000201	-173.93
			5.08	0.057	0.000177	99.22	0.000290	-151.89
			6.67	0.075	0.000327	81.81	0.000415	-170.25
			12.85	0.144	0.000352	3.45	0.000246	119.54
			19.43	0.218	0.000292	-17.21	0.000138	104.91
			32.13	0.360	0.000231	-35.02	0.000059	102.85
			38.39	0.429	0.000210	-41.19	0.000039	110.11
			50.22	0.561	0.000195	-50.03	0.000033	129.12
			62.59	0.701	0.000186	-56.84	0.000034	143.89
			75.61	0.846	0.000179	-63.43	0.000041	160.25
			87.34	0.976	0.000166	-67.78	0.000051	164.07
			98.92	1.106	0.000181	-71.20	0.000061	161.12
			112.04	1.254	0.000213	-78.85	0.000053	144.82
			123.88	1.388	0.000190	-86.39	0.000082	154.69
			148.82	1.667	0.000237	-101.49	0.000130	148.34
			173.38	1.942	0.000288	-128.55	0.000207	121.83
			200.87	2.248	0.000301	-177.86	0.000276	56.60
850.	0.	2.	1.95	0.022	0.000061	29.69	0.000215	-177.96
			3.15	0.035	0.000076	51.57	0.000218	-176.81
			4.88	0.055	0.000134	59.64	0.000254	-179.15
			6.50	0.073	0.000208	55.15	0.000301	173.48
			12.76	0.143	0.000346	-1.38	0.000269	112.78
			19.36	0.217	0.000281	-23.54	0.000135	90.73
			25.51	0.285	0.000248	-31.15	0.000082	87.48
			32.06	0.359	0.000230	-36.88	0.000055	90.59
			38.27	0.429	0.000215	-41.34	0.000037	98.50
			43.98	0.493	0.000209	-45.25	0.000032	109.99
			50.11	0.562	0.000202	-49.40	0.000028	126.32
			62.61	0.702	0.000191	-56.77	0.000033	156.29
			75.54	0.847	0.000187	-63.64	0.000046	164.80
			87.24	0.979	0.000173	-69.32	0.000059	165.97
			99.45	1.114	0.000191	-71.42	0.000065	166.79
			111.68	1.252	0.000202	-83.22	0.000076	173.12
			123.20	1.383	0.000194	-89.33	0.000093	160.79
			135.77	1.526	0.000215	-94.00	0.000112	159.02
			148.54	1.665	0.000233	-102.96	0.000139	150.02
			173.09	1.940	0.000279	-127.87	0.000208	126.10
			199.98	2.241	0.000275	-167.07	0.000248	72.10

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial \theta_s}$, $\frac{1}{\text{Deg.}}$ Mag.	Phs.	$\frac{\partial C_l/a\sigma}{\partial \theta_s}$ $\frac{1}{\text{Deg.}}$ Mag.	Phs.
850.	0.	4.	0.64	0.007	0.000170	2.48	0.000274	178.98
			1.27	0.014	0.000174	6.17	0.000275	176.47
			1.93	0.022	0.000182	9.51	0.000278	175.07
			3.18	0.036	0.000197	13.27	0.000280	169.95
			4.89	0.055	0.000229	16.53	0.000284	163.31
			6.53	0.073	0.000266	16.54	0.000296	155.26
			9.71	0.109	0.000339	4.95	0.000290	134.88
			12.85	0.145	0.000363	-11.06	0.000240	113.41
			19.48	0.219	0.000302	-33.28	0.000110	83.22
			25.82	0.290	0.000252	-40.76	0.000051	78.11
			32.43	0.365	0.000223	-45.25	0.000023	94.58
			38.78	0.435	0.000201	-49.13	0.000015	160.37
			44.13	0.494	0.000182	-51.48	0.000020	162.04
			50.39	0.564	0.000208	-46.73	0.000024	165.17
			63.12	0.708	0.000172	-59.46	0.000040	-165.36
			75.94	0.852	0.000175	-47.34	0.000048	-169.18
			88.00	0.987	0.000199	-62.27	0.000058	-173.21
			100.44	1.125	0.000194	-73.68	0.000070	179.05
			112.60	1.262	0.000204	-80.26	0.000092	171.82
			125.12	1.404	0.000214	-86.37	0.000110	165.59
			149.89	1.681	0.000254	-104.15	0.000161	149.12
850.	0.	16.	3.19	0.036	0.000309	-1.61	0.000281	169.10
			4.89	0.055	0.000325	-3.79	0.000260	159.64
			6.48	0.073	0.000334	-4.53	0.000277	152.77
			12.76	0.143	0.000391	-17.47	0.000245	123.22
			19.24	0.215	0.000361	-34.43	0.000167	93.10
			25.53	0.286	0.000314	-46.48	0.000100	67.52
			31.88	0.357	0.000277	-55.42	0.000058	52.04
			37.96	0.426	0.000244	-59.74	0.000030	34.68
			50.17	0.561	0.000215	-66.95	0.000007	16.59
			62.51	0.699	0.000196	-72.30	0.000011	-138.45
			75.39	0.842	0.000179	-77.84	0.000025	-141.79
			86.88	0.970	0.000171	-87.30	0.000033	-137.37
			98.70	1.103	0.000216	-85.56	0.000020	-96.25
			105.42	1.178	0.000206	-129.04	0.000167	-114.18
			111.09	1.255	0.000115	-139.36	0.000198	-152.51
			122.77	1.376	0.000130	-97.20	0.000142	-178.31
			135.42	1.518	0.000176	-97.62	0.000145	178.54
			147.70	1.655	0.000216	-104.79	0.000181	165.34

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial\theta_s}$, $\frac{1}{\text{Deg.}}$ Mag.	Phs.	$\frac{\partial C_l/a\sigma}{\partial\theta_s}$ $\frac{1}{\text{Deg.}}$ Mag.	Phs.
850.	0.	16.	171.77	1.922	0.000290	-132.39	0.000274	136.26
			185.89	2.093	0.000330	-165.98	0.000318	96.20
			199.47	2.234	0.000290	171.66	0.000272	73.73
550.	0.	0.	0.62	0.011	0.000005	127.50	0.000168	-176.77
			1.25	0.022	0.000014	122.68	0.000161	-170.57
			1.88	0.032	0.000026	132.81	0.000154	-156.41
			3.10	0.054	0.000064	131.46	0.000213	-142.00
			4.88	0.085	0.000170	121.46	0.000354	-138.36
			6.48	0.112	0.000276	107.56	0.000483	-148.80
			9.54	0.166	0.000527	63.43	0.000642	175.43
			12.60	0.218	0.000616	25.67	0.000589	140.82
			19.10	0.330	0.000506	-14.56	0.000331	106.63
			25.25	0.438	0.000416	-31.44	0.000196	96.32
			31.57	0.546	0.000355	-42.15	0.000122	97.30
			37.61	0.651	0.000333	-49.84	0.000088	103.01
			44.00	0.761	0.000312	-55.92	0.000070	116.69
			49.99	0.867	0.000310	-61.12	0.000072	132.54
			62.50	1.087	0.000301	-70.55	0.000090	155.30
			75.19	1.294	0.000297	-79.50	0.000122	161.15
			91.62	1.575	0.000278	-91.35	0.000181	155.97
			110.82	1.908	0.000381	-110.66	0.000283	144.34
			134.72	2.339	0.000491	-171.94	0.000490	86.88
			159.07	2.766	0.000199	127.14	0.000266	22.94
			198.46	3.455	0.000022	153.12	0.000117	-21.45
550.	0.	8.	1.89	0.033	0.000209	11.07	0.000472	177.45
			3.13	0.054	0.000235	17.39	0.000469	174.44
			6.51	0.113	0.000326	23.98	0.000502	166.05
			12.65	0.220	0.000587	9.88	0.000581	136.23
			19.17	0.333	0.000636	-27.67	0.000394	93.27
			25.30	0.440	0.000520	-44.58	0.000213	77.19
			31.83	0.554	0.000437	-53.22	0.000114	78.30
			37.84	0.658	0.000393	-58.53	0.000070	92.79
			43.98	0.763	0.000365	-63.06	0.000052	122.85
			50.23	0.871	0.000347	-67.02	0.000060	149.94
			62.80	1.092	0.000329	-74.65	0.000098	167.14
			75.78	1.315	0.000332	-82.57	0.000142	166.23
			98.86	1.715	0.000391	-97.57	0.000243	154.10

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial\theta_s}$, $\frac{1}{\text{Deg.}}$ Mag.	Phs.	$\frac{\partial C_l/a\sigma}{\partial\theta_s}$ $\frac{1}{\text{Deg.}}$ Mag.	Phs.
550.	0.	8.	111.40	1.932	0.000462	-116.21	0.000354	138.81
			123.20	2.133	0.000561	-142.62	0.000465	112.34
			160.53	2.784	0.000165	131.33	0.000270	18.59
			199.98	3.454	0.000081	-129.63	0.000174	4.62
550.	0.	16.	1.89	0.033	0.000231	9.59	0.000542	174.86
			3.12	0.054	0.000244	16.21	0.000538	174.17
			4.85	0.084	0.000275	19.46	0.000552	169.48
			6.45	0.112	0.000330	20.08	0.000554	164.07
			9.54	0.165	0.000431	19.18	0.000595	153.33
			12.66	0.219	0.000549	8.59	0.000603	137.40
			19.15	0.331	0.000654	-25.43	0.000475	97.62
			25.38	0.438	0.000530	-47.20	0.000270	76.55
			31.99	0.552	0.000420	-58.69	0.000137	70.44
			37.70	0.650	0.000367	-64.26	0.000081	77.87
			44.14	0.767	0.000337	-68.11	0.000060	101.36
			50.20	0.869	0.000310	-70.93	0.000052	129.75
			62.40	1.081	0.000281	-75.89	0.000070	153.83
			75.30	1.302	0.000287	-81.61	0.000106	162.77
			86.83	1.505	0.000306	-89.06	0.000146	163.10
			99.07	1.716	0.000372	-90.33	0.000203	157.26
			111.01	1.926	0.000526	-107.76	0.000279	147.89
			123.06	2.131	0.000626	-149.37	0.000438	124.23
			148.19	2.566	0.000287	142.93	0.000319	42.57
850.	0.05	1.	0.63	0.007	0.000189	0.17	0.000113	-179.20
			1.26	0.014	0.000204	-1.84	0.000094	-179.91
			2.30	0.026	0.000193	3.90	0.000098	-179.18
			3.22	0.036	0.000178	-3.57	0.000101	-177.96
			4.88	0.055	0.000175	-1.38	0.000117	-179.55
			6.48	0.073	0.000162	2.97	0.000130	177.68
			9.75	0.109	0.000192	11.19	0.000172	157.53
			12.68	0.143	0.000241	-2.07	0.000158	127.84
			19.14	0.216	0.000223	-23.31	0.000097	96.99
			25.45	0.286	0.000190	-34.74	0.000053	74.65
			31.75	0.357	0.000175	-39.30	0.000025	70.10
			37.88	0.426	0.000167	-42.54	0.000014	58.45
			44.07	0.496	0.000185	-50.23	0.000022	-49.88
			49.92	0.562	0.000174	-54.19	0.000023	-70.87

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial\theta_s}$, $\frac{1}{\text{Deg.}}$ Mag.	Phs.	$\frac{\partial C_l/a\sigma}{\partial\theta_s}$ $\frac{1}{\text{Deg.}}$ Mag.	Phs.
850.	0.05	1.	56.78	0.639	0.000142	-58.79	0.000037	-96.55
			62.31	0.700	0.000171	-34.55	0.000025	-156.58
			75.18	0.845	0.000197	-66.11	0.000028	-95.22
			86.98	0.978	0.000194	-76.99	0.000044	-103.88
			99.04	1.114	0.000202	-82.38	0.000036	-119.94
850.	0.1	1.	0.64	0.007	0.000266	0.40	0.000147	179.74
			1.24	0.014	0.000258	-1.41	0.000137	175.39
			1.89	0.021	0.000263	-1.96	0.000131	173.53
			3.09	0.035	0.000251	-4.21	0.000139	169.92
			5.03	0.056	0.000243	-4.75	0.000137	166.32
			6.57	0.074	0.000243	-7.06	0.000139	160.59
			9.69	0.109	0.000248	-11.31	0.000140	147.87
			12.58	0.141	0.000246	-15.24	0.000135	138.53
			18.99	0.213	0.000249	-28.72	0.000104	106.28
			25.23	0.283	0.000228	-37.80	0.000072	90.85
			31.50	0.354	0.000205	-44.80	0.000043	77.62
			37.26	0.418	0.000188	-46.97	0.000022	70.56
			44.07	0.495	0.000173	-51.50	0.000004	32.13
			49.89	0.559	0.000166	-53.72	0.000008	-102.45
			56.73	0.637	0.000149	-57.95	0.000020	-122.15
			61.99	0.696	0.000131	-35.01	0.000030	-163.02
			74.69	0.838	0.000188	-56.04	0.000028	-170.89
			86.45	0.971	0.000186	-66.33	0.000040	-157.83
			98.02	1.098	0.000184	-76.94	0.000052	-163.20
850.	0.1	12.	0.63	0.007	0.000312	0.92	0.000284	175.95
			1.35	0.015	0.000312	1.17	0.000258	177.06
			3.52	0.040	0.000293	12.27	0.000234	178.78
			3.13	0.035	0.000313	0.02	0.000266	170.85
			4.99	0.056	0.000318	-1.01	0.000267	164.74
			6.46	0.073	0.000344	-3.15	0.000275	157.92
			9.51	0.107	0.000347	-6.03	0.000262	145.53
			12.63	0.142	0.000375	-10.09	0.000263	131.71
			19.09	0.214	0.000388	-25.01	0.000215	102.93
			25.26	0.283	0.000339	-36.92	0.000147	83.34
			31.75	0.356	0.000303	-44.49	0.000101	72.02
			37.70	0.423	0.000261	-48.69	0.000073	64.49
			43.97	0.493	0.000244	-51.94	0.000049	66.33

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial \theta_s} \cdot \frac{1}{Deg.}$ Mag.	Phs.	$\frac{\partial C_l/a\sigma}{\partial \theta_s} \cdot \frac{1}{Deg.}$ Mag.	Phs.
850.	0.1	12.	49.72	0.558	0.000227	-56.54	0.000031	63.85
			56.63	0.635	0.000181	-61.33	0.000014	93.46
			62.56	0.703	0.000192	-27.08	0.000036	110.60
			74.59	0.836	0.000246	-51.48	0.000029	92.29
			87.15	0.977	0.000248	-66.96	0.000031	119.22
			98.18	1.102	0.000237	-75.96	0.000016	87.32
850.	0.15	1.	0.63	0.007	0.000340	-4.30	0.000149	175.94
			1.25	0.014	0.000353	-3.07	0.000151	173.98
			2.06	0.023	0.000339	-1.54	0.000150	173.63
			3.24	0.036	0.000368	-5.75	0.000156	166.54
			4.90	0.055	0.000379	-8.65	0.000158	158.04
			6.47	0.073	0.000361	-11.07	0.000158	151.75
			9.55	0.107	0.000371	-16.44	0.000159	139.59
			12.60	0.141	0.000389	-23.02	0.000154	125.89
			19.21	0.216	0.000346	-35.46	0.000112	87.37
			25.35	0.284	0.000306	-44.64	0.000073	54.54
			31.85	0.357	0.000258	-49.24	0.000035	33.49
			37.89	0.425	0.000240	-51.95	0.000023	-1.92
			44.12	0.497	0.000225	-55.40	0.000025	-46.81
			49.81	0.560	0.000206	-59.94	0.000033	-65.81
			56.77	0.638	0.000156	-61.57	0.000044	-100.15
			62.25	0.699	0.000205	-37.07	0.000025	-137.88
			74.71	0.840	0.000221	-64.35	0.000038	-93.72
			86.45	0.970	0.000211	-75.61	0.000047	-102.11
			98.82	1.109	0.000205	-83.01	0.000046	-125.46
850.	0.2	1.	0.63	0.007	0.000356	-1.44	0.000152	176.76
			1.24	0.014	0.000363	-2.10	0.000162	174.87
			2.34	0.026	0.000340	-7.36	0.000152	162.33
			3.09	0.035	0.000385	-5.61	0.000172	166.89
			4.87	0.055	0.000392	-8.66	0.000166	160.00
			6.65	0.075	0.000387	-10.71	0.000172	153.88
			9.59	0.108	0.000389	-16.47	0.000169	141.79
			12.66	0.142	0.000386	-22.31	0.000161	129.60
			19.07	0.214	0.000351	-35.01	0.000118	99.67
			25.19	0.282	0.000313	-44.07	0.000082	77.16
			31.66	0.355	0.000273	-50.59	0.000047	54.91
			37.71	0.423	0.000251	-55.45	0.000026	19.46

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial \theta_s}$, $\frac{1}{\text{Deg.}}$		$\frac{\partial C_l/a\sigma}{\partial \theta_s}$ $\frac{1}{\text{Deg.}}$	
			rad/sec		Mag.	Phs.	Mag.	Phs.
850.	0.2	1.	44.43	0.497	0.000222	-59.24	0.000027	-57.17
			49.76	0.558	0.000205	-63.41	0.000034	-75.61
			56.61	0.635	0.000153	-63.36	0.000045	-113.50
			62.41	0.700	0.000218	-41.47	0.000021	-149.25
			74.80	0.838	0.000221	-63.59	0.000038	-124.09
			86.88	0.977	0.000218	-73.71	0.000057	-130.77
			98.64	1.108	0.000208	-83.58	0.000060	-136.28
850.	0.2	12.	1.25	0.014	0.000341	-0.29	0.000264	175.88
			2.50	0.028	0.000354	0.30	0.000261	174.90
			3.36	0.038	0.000339	-2.30	0.000265	169.63
			5.03	0.056	0.000344	-2.35	0.000258	161.95
			6.67	0.075	0.000351	-3.80	0.000263	156.66
			9.73	0.110	0.000368	-7.42	0.000256	141.81
			12.62	0.142	0.000381	-13.49	0.000240	129.31
			18.98	0.214	0.000366	-28.63	0.000174	101.65
			25.18	0.283	0.000317	-39.37	0.000110	92.89
			31.75	0.357	0.000280	-46.61	0.000081	82.43
			37.49	0.422	0.000257	-50.43	0.000066	82.84
			44.05	0.495	0.000233	-55.63	0.000046	85.70
			49.55	0.557	0.000213	-60.34	0.000038	89.06
			56.53	0.636	0.000172	-68.12	0.000029	100.09
			62.30	0.701	0.000179	-26.59	0.000054	111.01
			74.57	0.838	0.000222	-51.48	0.000039	94.97
			86.81	0.974	0.000204	-65.87	0.000043	78.95
			98.39	1.104	0.000208	-71.87	0.000034	37.82
850.	0.26	1.	0.62	0.007	0.000464	-0.31	0.000143	178.50
			1.24	0.014	0.000500	-3.54	0.000143	172.25
			1.88	0.021	0.000508	-4.21	0.000134	168.99
			3.33	0.037	0.000554	-6.18	0.000128	161.49
			5.05	0.057	0.000616	-10.25	0.000086	134.31
			6.57	0.074	0.000662	-15.66	0.000088	94.04
			12.73	0.143	0.000552	-26.11	0.000126	89.04
			19.09	0.215	0.000495	-40.44	0.000122	46.66
			25.16	0.283	0.000412	-49.41	0.000086	39.04
			31.55	0.354	0.000340	-55.30	0.000054	24.22
			37.47	0.421	0.000320	-58.81	0.000049	-24.98
			43.83	0.492	0.000274	-62.63	0.000049	-59.18

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial\theta_s}$, $\frac{1}{\text{Deg.}}$ Mag.	Phs.	$\frac{\partial C_l/a\sigma}{\partial\theta_s}$ $\frac{1}{\text{Deg.}}$ Mag.	Phs.
850.	0.26	1.	49.76	0.559	0.000242	-65.70	0.000049	-88.93
			56.84	0.638	0.000192	-69.34	0.000064	-116.13
			62.42	0.701	0.000195	-37.10	0.000055	-148.80
			74.89	0.842	0.000246	-62.96	0.000057	-122.43
			86.14	0.966	0.000227	-72.33	0.000082	-107.85
850.	0.26	12.	0.76	0.009	0.000384	1.63	0.000295	178.99
			1.25	0.014	0.000394	-0.46	0.000297	176.35
			2.33	0.026	0.000399	-2.98	0.000274	172.65
			3.13	0.035	0.000399	-2.90	0.000300	169.66
			4.87	0.055	0.000410	-4.58	0.000300	163.15
			6.47	0.073	0.000402	-5.06	0.000299	157.49
			9.51	0.107	0.000422	-9.68	0.000290	145.72
			12.62	0.142	0.000438	-15.56	0.000276	133.04
			18.95	0.211	0.000432	-30.92	0.000219	106.66
			25.09	0.282	0.000394	-43.97	0.000149	87.71
			31.58	0.355	0.000337	-51.92	0.000100	72.82
			37.60	0.423	0.000290	-58.90	0.000060	67.91
			43.66	0.494	0.000258	-63.07	0.000038	70.41
			49.82	0.558	0.000231	-67.38	0.000025	74.73
			56.92	0.639	0.000176	-73.95	0.000018	120.82
			62.14	0.699	0.000142	-30.69	0.000043	126.88
			74.62	0.841	0.000232	-54.95	0.000022	105.41
			86.48	0.973	0.000222	-64.23	0.000005	135.45
			98.24	1.106	0.000221	-71.50	0.000012	-17.18

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial\theta_c}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.	$\frac{\partial C_l/a\sigma}{\partial\theta_c}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.
850.	0.1	1.	0.63	0.007	0.000329	176.85	0.000185	-177.06
			1.24	0.014	0.000329	174.09	0.000189	-175.59
			1.98	0.022	0.000323	170.51	0.000200	-173.40
			3.33	0.037	0.000326	165.93	0.000200	-171.75
			5.01	0.057	0.000327	158.80	0.000228	-168.21
			6.45	0.072	0.000319	149.22	0.000255	-168.53
			9.54	0.107	0.000298	133.54	0.000310	-176.30
			12.56	0.141	0.000265	116.20	0.000351	169.57
			18.98	0.213	0.000150	89.77	0.000294	144.05
			25.08	0.282	0.000091	84.71	0.000236	136.81
			31.58	0.354	0.000063	82.96	0.000218	134.19
			37.43	0.419	0.000041	89.88	0.000202	129.04
			43.99	0.494	0.000027	95.91	0.000187	123.77
			49.66	0.558	0.000021	107.15	0.000179	121.46
			56.64	0.637	0.000018	176.13	0.000170	117.65
			62.45	0.702	0.000050	135.24	0.000171	116.85
			75.19	0.843	0.000016	144.85	0.000159	109.21
			86.57	0.971	0.000015	163.86	0.000172	102.24
			98.39	1.104	0.000023	162.75	0.000192	90.78
850.	0.1	12.	0.63	0.007	0.000360	177.85	0.000271	179.30
			1.24	0.014	0.000359	175.09	0.000276	179.28
			2.24	0.025	0.000361	173.23	0.000284	179.23
			3.25	0.037	0.000367	166.94	0.000277	-178.28
			4.84	0.054	0.000359	160.96	0.000287	-177.18
			6.44	0.072	0.000359	154.29	0.000306	-176.55
			9.50	0.107	0.000349	139.45	0.000352	179.02
			12.55	0.141	0.000323	123.46	0.000394	170.22
			18.97	0.213	0.000215	95.59	0.000387	148.43
			25.02	0.281	0.000129	84.66	0.000334	136.12
			31.36	0.353	0.000079	87.72	0.000292	129.00
			37.61	0.422	0.000057	95.68	0.000265	123.19
			43.86	0.492	0.000049	102.97	0.000241	119.21
			49.74	0.558	0.000043	106.58	0.000228	115.94
			56.52	0.635	0.000025	105.39	0.000215	111.36
			62.14	0.697	0.000048	-172.25	0.000194	108.27
			74.91	0.842	0.000082	122.41	0.000192	108.61
			86.29	0.970	0.000047	113.10	0.000200	104.34
			97.87	1.104	0.000026	95.29	0.000209	102.89

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial \theta_c}$ $\frac{1}{\text{Deg.}}$		$\frac{\partial C_l/a\sigma}{\partial \theta_c}$ $\frac{1}{\text{Deg.}}$	
			rad/sec		Mag.	Phs.	Mag.	Phs.
850.	0.26	12.	0.63	0.007	0.000417	178.68	0.000310	179.38
			1.35	0.015	0.000416	175.76	0.000307	-179.77
			2.14	0.024	0.000427	172.87	0.000308	-179.42
			3.24	0.036	0.000408	168.23	0.000316	-179.60
			4.88	0.055	0.000413	162.90	0.000330	-178.79
			6.74	0.076	0.000403	156.67	0.000342	179.94
			9.51	0.107	0.000400	145.11	0.000380	175.97
			12.59	0.141	0.000377	131.63	0.000409	168.52
			19.01	0.213	0.000290	105.89	0.000428	149.20
			25.05	0.281	0.000197	90.94	0.000385	133.69
			31.43	0.353	0.000127	81.34	0.000336	120.17
			37.15	0.418	0.000091	86.99	0.000286	113.57
			43.78	0.493	0.000071	92.87	0.000245	108.70
			49.97	0.562	0.000061	95.14	0.000226	106.63
			56.82	0.638	0.000045	95.18	0.000211	102.28
			62.25	0.700	0.000044	169.77	0.000188	97.39
			74.80	0.841	0.000088	108.55	0.000180	102.65
			86.57	0.971	0.000057	91.75	0.000191	100.50
			98.08	1.103	0.000041	68.66	0.000195	94.67

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial\theta_o}$ $\frac{1}{\text{Deg.}}$ Mag.	Phs.	$\frac{\partial C_l/a\sigma}{\partial\theta_o}$ $\frac{1}{\text{Deg.}}$ Mag.	Phs.
850.	0.05	2.	0.63	0.007	0.000122	-9.72	0.000049	-2.49
			1.25	0.014	0.000128	-16.15	0.000057	-6.10
			1.89	0.021	0.000135	-23.17	0.000058	-7.65
			3.13	0.035	0.000129	-39.96	0.000069	-11.76
			4.88	0.055	0.000124	-61.95	0.000079	-23.68
			6.45	0.073	0.000121	-81.51	0.000092	-38.66
			9.59	0.108	0.000093	-133.64	0.000114	-82.72
			12.62	0.142	0.000061	178.35	0.000110	-121.52
			19.14	0.215	0.000026	84.98	0.000073	-167.97
			25.28	0.284	0.000019	22.72	0.000055	168.42
			31.69	0.356	0.000012	-16.36	0.000035	150.88
			37.69	0.423	0.000018	-24.29	0.000029	146.78
			44.04	0.494	0.000018	-71.98	0.000022	145.67
			49.92	0.560	0.000025	-120.24	0.000013	161.36
			56.60	0.636	0.000062	164.20	0.000024	-156.42
			62.33	0.701	0.000106	61.07	0.000039	158.86
			75.07	0.844	0.000063	-6.51	0.000020	139.98
			82.24	0.925	0.000055	-25.21	0.000016	165.35
			98.64	1.111	0.000057	-51.54	0.000030	178.56
850.	0.1	2.	0.63	0.007	0.000179	-8.39	0.000056	1.00
			1.24	0.014	0.000163	-11.20	0.000056	-3.35
			1.88	0.021	0.000168	-15.33	0.000061	-2.85
			3.33	0.037	0.000158	-22.60	0.000067	-6.16
			4.86	0.055	0.000159	-37.39	0.000077	-13.62
			6.43	0.072	0.000145	-50.83	0.000082	-25.25
			9.55	0.107	0.000120	-77.72	0.000099	-52.93
			12.56	0.141	0.000085	-105.41	0.000118	-81.28
			18.95	0.213	0.000006	119.63	0.000103	-146.17
			24.97	0.281	0.000025	-9.83	0.000063	-176.16
			31.35	0.353	0.000025	-26.72	0.000040	178.19
			37.34	0.419	0.000032	-38.92	0.000033	171.68
			44.09	0.495	0.000032	-62.22	0.000031	165.33
			49.92	0.560	0.000033	-95.98	0.000021	-176.34
			56.33	0.633	0.000045	-179.20	0.000032	-153.66
			62.36	0.700	0.000104	49.90	0.000047	169.36
			74.55	0.836	0.000085	-14.69	0.000024	161.41
			86.38	0.969	0.000079	-40.87	0.000028	-172.16
			98.18	1.103	0.000072	-58.45	0.000040	-167.16

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial \theta_o}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.	$\frac{\partial C_l/a\sigma}{\partial \theta_o}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.
850.	0.1	12.	0.75	0.008	0.000180	-0.48	0.000018	179.08
			1.24	0.014	0.000207	-4.81	0.000020	167.15
			1.87	0.021	0.000186	-10.46	0.000015	163.39
			3.10	0.035	0.000190	-14.95	0.000014	156.59
			4.85	0.054	0.000192	-20.28	0.000027	176.45
			6.47	0.073	0.000178	-27.97	0.000009	172.06
			9.49	0.107	0.000160	-39.82	0.000010	-158.60
			12.72	0.143	0.000137	-47.18	0.000009	-138.93
			18.83	0.211	0.000106	-50.07	0.000013	169.81
			25.18	0.282	0.000076	-47.00	0.000021	123.29
			31.45	0.353	0.000083	-51.84	0.000002	-139.35
			37.09	0.416	0.000077	-44.33	0.000019	-131.45
			44.10	0.495	0.000080	-55.27	0.000022	-139.02
			49.91	0.559	0.000076	-67.48	0.000029	-137.81
			56.42	0.633	0.000049	-117.92	0.000038	-141.04
			62.38	0.699	0.000069	41.12	0.000048	-179.89
			74.78	0.837	0.000089	-32.19	0.000041	-171.99
			86.64	0.971	0.000084	-58.10	0.000046	157.95
			98.05	1.101	0.000073	-74.66	0.000037	123.78
850.	0.26	1.	0.63	0.007	0.000304	-2.09	0.000031	177.97
			1.25	0.014	0.000299	-4.34	0.000033	171.68
			2.00	0.022	0.000297	-2.27	0.000036	179.28
			3.15	0.035	0.000300	-7.72	0.000028	160.16
			4.87	0.055	0.000312	-12.76	0.000026	140.31
			6.44	0.072	0.000313	-16.94	0.000026	128.55
			9.74	0.109	0.000301	-25.26	0.000023	88.21
			12.65	0.142	0.000285	-32.57	0.000021	44.94
			19.34	0.217	0.000240	-47.74	0.000031	-33.45
			25.30	0.284	0.000200	-56.22	0.000048	-72.62
			31.62	0.355	0.000161	-60.32	0.000057	-100.79
			37.66	0.423	0.000141	-59.53	0.000058	-121.90
			43.95	0.493	0.000129	-65.96	0.000061	-132.42
			49.88	0.559	0.000117	-76.02	0.000065	-139.61
			56.86	0.638	0.000051	-106.95	0.000083	-148.48
			62.31	0.699	0.000126	-4.86	0.000073	-178.04
			75.12	0.843	0.000145	-50.15	0.000049	-160.03
			86.83	0.974	0.000138	-64.41	0.000069	-155.94
			98.76	1.108	0.000131	-71.82	0.000094	-163.87

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial\theta_o}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.	$\frac{\partial C_l/a\sigma}{\partial\theta_o}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.
850.	0.26	12.	0.75	0.008	0.000466	-1.22	0.000095	170.48
			1.24	0.014	0.000474	-3.43	0.000089	167.88
			1.90	0.021	0.000473	-4.65	0.000087	164.92
			3.28	0.037	0.000465	-6.18	0.000088	151.30
			5.07	0.057	0.000465	-11.17	0.000073	142.65
			6.43	0.072	0.000467	-14.83	0.000076	127.45
			9.65	0.108	0.000463	-22.41	0.000075	94.16
			12.64	0.142	0.000451	-31.20	0.000073	65.20
			18.95	0.213	0.000393	-47.90	0.000080	3.44
			25.18	0.283	0.000327	-57.04	0.000077	-36.78
			31.52	0.354	0.000267	-69.78	0.000103	-70.77
			37.52	0.421	0.000210	-69.55	0.000095	-96.31
			44.00	0.493	0.000186	-72.62	0.000090	-112.73
			49.87	0.560	0.000171	-76.10	0.000096	-122.98
			56.50	0.635	0.000140	-86.57	0.000099	-132.00
			62.09	0.697	0.000094	-37.28	0.000095	-157.36
			74.89	0.839	0.000164	-65.01	0.000088	-153.96
			80.51	0.903	0.000161	-70.42	0.000096	-164.05
			98.33	1.104	0.000120	-82.36	0.000077	175.47

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial a}$ $\frac{1}{\text{Deg.}}$ Mag.	Phs.	$\frac{C_l/a\sigma}{\partial a}$ $\frac{1}{\text{Deg.}}$ Mag.	Phs.
850.	0.	0.	1.91	0.022	0.000028	143.89	0.000090	-95.68
			3.22	0.036	0.000078	145.54	0.000166	-102.41
			4.93	0.055	0.000224	131.07	0.000309	-118.19
			6.49	0.073	0.000421	108.26	0.000455	-142.38
			9.59	0.108	0.000639	62.19	0.000507	169.46
			12.72	0.143	0.000620	42.69	0.000398	148.37
			19.34	0.217	0.000616	28.14	0.000285	131.62
			25.60	0.287	0.000648	21.96	0.000241	123.23
			31.99	0.358	0.000748	17.62	0.000236	117.56
			38.20	0.428	0.000923	14.19	0.000256	112.69
			44.15	0.495	0.001346	8.56	0.000340	105.78
			50.34	0.564	0.002147	0.50	0.000499	95.00
850.	0.	4.	1.91	0.022	0.000040	-80.50	0.000066	78.69
			3.14	0.035	0.000072	-77.66	0.000111	72.90
			4.89	0.055	0.000133	-78.58	0.000181	63.37
			6.48	0.073	0.000201	-80.89	0.000241	53.58
			9.60	0.108	0.000367	-94.28	0.000359	30.75
			12.73	0.143	0.000520	-112.90	0.000425	6.11
			19.29	0.216	0.000624	-141.11	0.000375	-30.12
			25.41	0.285	0.000658	-152.49	0.000314	-45.79
			32.06	0.359	0.000722	-158.33	0.000290	-54.87
			38.09	0.427	0.000824	-161.20	0.000292	-60.51
			44.31	0.498	0.001030	-165.09	0.000329	-67.88
			57.25	0.642	0.002370	-179.74	0.000631	-92.20
			62.91	0.705	0.002737	54.07	0.000701	138.64
850.	0.	8.	2.06	0.023	0.000055	98.74	0.000049	-100.40
			3.25	0.037	0.000089	99.95	0.000091	-107.54
			4.89	0.055	0.000131	93.72	0.000129	-115.47
			6.65	0.075	0.000185	95.31	0.000165	-126.10
			9.60	0.108	0.000302	83.63	0.000251	-142.32
			12.74	0.144	0.000434	72.91	0.000314	-159.38
			19.34	0.218	0.000636	48.85	0.000358	163.97
			25.52	0.286	0.000725	33.58	0.000330	141.51
			32.11	0.359	0.000840	23.58	0.000318	126.00
			38.32	0.429	0.001057	16.79	0.000351	115.05

TABLE B-I. CONTINUED.

RPM	μ	θ_0	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial a}$ $\frac{1}{\text{Deg.}}$ Mag.	Phs.	$\frac{C_l/a\sigma}{\partial a}$ $\frac{1}{\text{Deg.}}$ Mag.	Phs.
850.	0.05	12.	4.85	0.055	0.000149	-96.24	0.000170	64.32
			6.41	0.072	0.000209	-95.65	0.000230	55.42
			12.69	0.143	0.000576	-123.45	0.000444	-2.68
			18.72	0.210	0.000663	-147.60	0.000390	-37.97
			25.19	0.283	0.000747	-157.40	0.000342	-57.85
			31.53	0.355	0.000884	-170.03	0.000347	-75.57
			37.37	0.420	0.001354	-170.90	0.000449	-79.45
			56.79	0.638	0.001937	42.96	0.000479	126.51
			62.26	0.700	0.001229	33.08	0.000292	114.47
			74.39	0.837	0.000751	26.79	0.000173	102.09
850.	0.1	1.	1.26	0.014	0.000047	-73.09	0.000034	73.61
			2.15	0.024	0.000047	-86.72	0.000041	60.81
			3.12	0.035	0.000097	-90.38	0.000078	66.18
			5.07	0.057	0.000147	-96.20	0.000121	60.65
			6.51	0.073	0.000197	-99.28	0.000161	54.42
			9.58	0.108	0.000303	-106.34	0.000241	39.94
			12.84	0.144	0.000425	-115.06	0.000327	21.75
			19.22	0.216	0.000649	-136.55	0.000413	-19.22
			25.33	0.284	0.000778	-151.24	0.000385	-46.97
			31.73	0.355	0.000880	-164.43	0.000350	-66.53
			37.64	0.421	0.001317	-170.27	0.000456	-75.11
			44.24	0.494	0.002877	168.82	0.000910	-99.95
			49.91	0.560	0.004572	92.03	0.001323	-179.07
			56.89	0.638	0.001840	42.31	0.000487	127.94
			62.41	0.698	0.001158	34.41	0.000312	119.45
			74.82	0.839	0.000672	27.51	0.000186	106.17
850.	0.1	12.	0.63	0.007	0.000097	-10.22	0.000034	-1.76
			1.25	0.014	0.000096	-27.85	0.000052	38.67
			1.88	0.021	0.000113	-37.81	0.000069	49.17
			3.10	0.035	0.000139	-55.86	0.000102	52.36
			4.89	0.055	0.000186	-72.50	0.000152	48.17
			6.62	0.074	0.000245	-80.76	0.000196	44.76
			9.63	0.108	0.000342	-97.04	0.000280	27.73
			12.61	0.141	0.000462	-110.81	0.000348	11.41
			19.03	0.214	0.000652	-131.91	0.000406	-20.89
			25.16	0.282	0.000784	-146.61	0.000410	-42.28
			31.46	0.352	0.001031	-164.56	0.000477	-64.61

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial a}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.	$\frac{C_l/a\sigma}{\partial a}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.
850.	0.1	12.	37.38	0.420	0.001432	-170.19	0.000589	-76.13
			44.79	0.502	0.003112	-168.18	0.001081	-67.98
			50.32	0.567	0.004005	84.76	0.001321	171.43
			56.57	0.637	0.001740	46.74	0.000534	132.41
			62.10	0.700	0.001193	38.11	0.000344	121.56
			74.46	0.837	0.000697	32.53	0.000217	116.39
850.	0.26	1.	0.63	0.007	0.000077	-24.15	0.000036	21.13
			1.24	0.014	0.000097	-33.36	0.000033	40.65
			1.87	0.021	0.000080	-45.29	0.000049	40.75
			3.09	0.035	0.000123	-58.23	0.000060	50.78
			4.84	0.054	0.000165	-66.50	0.000084	53.18
			6.46	0.073	0.000212	-79.66	0.000115	49.47
			9.45	0.106	0.000305	-92.39	0.000166	40.71
			12.58	0.141	0.000399	-103.65	0.000213	28.61
			18.94	0.213	0.000611	-122.88	0.000307	3.70
			25.12	0.282	0.000819	-138.66	0.000387	-20.13
			31.39	0.353	0.000986	-157.22	0.000423	-47.19
			37.31	0.419	0.001392	-161.46	0.000562	-58.59
			43.65	0.490	0.002828	177.46	0.001059	-86.32
			50.04	0.561	0.004346	107.55	0.001455	-161.68
			56.61	0.635	0.002518	58.25	0.000789	143.28
			62.26	0.699	0.001250	38.75	0.000379	121.73
			74.64	0.837	0.000734	30.59	0.000232	106.61
850.	0.26	12.	1.24	0.014	0.000130	-14.60	0.000068	35.75
			1.94	0.022	0.000142	-24.89	0.000045	40.01
			3.12	0.035	0.000164	-36.20	0.000098	42.57
			4.95	0.056	0.000197	-51.06	0.000140	45.97
			6.61	0.074	0.000246	-63.35	0.000195	40.24
			9.54	0.107	0.000335	-79.04	0.000264	34.44
			12.54	0.141	0.000454	-92.93	0.000323	21.86
			19.09	0.215	0.000687	-119.20	0.000488	-7.55
			25.25	0.283	0.000924	-136.17	0.000548	-32.12
			31.54	0.354	0.001077	-159.57	0.000569	-64.75
			37.41	0.419	0.001541	-167.33	0.000720	-76.64
			46.40	0.520	0.005736	130.79	0.004063	-148.82
			51.32	0.576	0.004312	71.29	0.003593	170.96
			56.73	0.635	0.001769	46.51	0.000631	131.75
			62.17	0.697	0.001190	38.07	0.000430	120.54
			74.76	0.838	0.000689	30.99	0.000261	114.90

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{C_m/a\sigma}{\partial\phi}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.	$\frac{C_l/a\sigma}{\partial\phi}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.
850.	0.	0.	1.91	0.021	0.000097	-96.71	0.000029	-36.17
			3.19	0.036	0.000172	-103.85	0.000081	-38.23
			4.93	C.055	0.000325	-118.69	0.000237	-51.06
			6.50	C.073	C.000465	-145.17	0.000439	-76.08
			9.60	0.108	0.000482	168.19	0.000627	-120.19
			12.69	0.143	0.000402	149.35	0.000617	-138.54
			19.43	0.218	0.000286	134.23	0.000585	-151.39
			25.48	0.286	0.000247	127.12	0.000596	-155.79
			31.81	C.358	0.000221	121.95	0.000619	-157.94
			37.83	0.425	0.000206	118.76	0.000643	-159.10
			44.20	0.496	0.000203	115.39	0.000674	-160.40
			50.08	0.562	0.000216	110.09	0.000711	-161.31
			56.96	0.640	0.000284	90.39	0.000770	-163.53
			62.79	C.7C5	0.000228	48.84	0.000791	-166.36
850.	0.	2.	1.92	0.022	0.000149	-96.40	0.000064	-70.52
			3.34	0.037	0.000244	-105.00	0.000123	-62.88
			5.02	0.056	0.000427	-113.73	0.000267	-61.50
			6.60	0.074	0.000661	-126.02	0.000482	-66.62
			9.75	C.110	0.001125	-166.99	0.001141	-98.82
			12.78	0.143	0.000930	160.30	0.001191	-128.93
			19.31	0.216	0.000610	134.89	0.001076	-150.95
			25.55	0.286	0.000484	126.18	0.001043	-156.94
			32.03	0.359	C.000232	121.60	0.000579	-159.02
			38.15	0.427	C.000218	117.78	0.000597	-159.96
			44.36	0.497	0.000217	115.28	0.000628	-160.70
			50.17	0.563	0.000228	109.47	0.000659	-161.32
			56.98	0.639	0.000284	85.66	0.000711	-163.62
			62.82	C.7C3	C.000199	50.33	0.000729	-165.46
850.	0.	4.	1.93	0.022	0.000068	-97.38	0.000045	-83.32
			3.18	0.036	0.000115	-104.67	0.000080	-76.05
			4.91	0.055	0.000179	-114.40	0.000138	-76.53
			6.50	0.073	0.000246	-123.65	0.000216	-79.43
			9.57	C.1C7	0.000369	-146.44	0.000399	-91.46
			12.80	C.143	0.000432	-174.65	0.000577	-113.19
			19.40	C.218	0.000371	149.31	0.000674	-141.05
			25.56	0.287	0.000300	133.26	0.000669	-151.73
			32.16	C.360	0.000253	123.69	0.000672	-156.52

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{C_m/a\sigma}{\partial\phi}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.	$\frac{C_l/a\sigma}{\partial\phi}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.
850.	0.	4.	38.25	0.428	0.000230	117.47	0.000686	-158.82
			44.14	0.492	0.000219	112.72	0.000705	-160.11
			50.35	0.567	0.000227	108.10	0.000755	-160.76
			57.05	0.641	0.000246	101.87	0.000807	-161.64
			62.54	0.703	0.000316	89.41	0.000870	-163.81
			68.70	0.772	0.000267	36.91	0.000902	-169.50
			75.83	0.852	0.000136	28.34	0.000847	-175.11
850.	0.	8.	1.93	0.022	0.000052	-95.13	0.000048	-72.81
			3.14	0.035	0.000090	-104.92	0.000078	-80.18
			5.10	0.057	0.000144	-113.81	0.000136	-84.39
			6.52	0.073	0.000182	-120.73	0.000190	-84.86
			9.62	0.108	0.000257	-138.58	0.000310	-93.35
			12.72	0.143	0.000332	-157.45	0.000449	-103.79
			19.33	0.217	0.000368	166.43	0.000643	-128.73
			25.49	0.287	0.000322	144.71	0.000690	-143.44
			31.93	0.359	0.000282	131.44	0.000707	-151.24
			38.18	0.429	0.000254	122.76	0.000720	-155.37
			44.12	0.496	0.000243	117.56	0.000737	-157.70
			50.28	0.564	0.000253	111.71	0.000769	-159.14
			56.94	0.638	0.000314	92.74	0.000821	-161.87
			63.00	0.707	0.000223	53.11	0.000836	-164.82
850.	0.	16.	1.92	0.022	0.000035	-96.80	0.000061	-78.27
			3.20	0.036	0.000072	-104.67	0.000077	-73.79
			4.89	0.055	0.000115	-108.61	0.000138	-81.29
			6.54	0.073	0.000153	-119.22	0.000192	-82.91
			9.69	0.109	0.000226	-133.50	0.000295	-93.24
			12.91	0.145	0.000280	-151.83	0.000426	-104.39
			19.33	0.217	0.000336	175.46	0.000622	-123.09
			25.60	0.288	0.000333	154.43	0.000722	-136.96
			32.03	0.360	0.000302	138.54	0.000763	-146.27
			38.25	0.430	0.000275	128.68	0.000786	-151.59
			44.11	0.495	0.000270	122.54	0.000807	-154.51
			50.35	0.566	0.000287	111.33	0.000857	-156.83
			57.12	0.642	0.000316	76.63	0.000905	-161.32
			62.79	0.706	0.000193	60.49	0.000927	-162.96

TABLE B-I. CONTINUED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{\partial C_m/a\sigma}{\partial \phi}$ Mag.	$\frac{1}{Deg.}$ Phs.	$\frac{C_l/a\sigma}{\partial \phi}$ Mag.	$\frac{1}{Deg.}$ Phs.
850.	0.1	1.	0.63	0.007	0.000014	-80.91	0.000010	-102.80
			1.26	0.014	0.000026	-89.27	0.000024	-92.16
			2.25	0.025	0.000040	-91.64	0.000035	-70.20
			3.40	0.038	0.000077	-99.30	0.000060	-80.61
			5.09	0.057	0.000118	-110.58	0.000107	-80.84
			6.80	0.076	0.000142	-119.51	0.000144	-79.79
			9.79	0.110	0.000227	-137.11	0.000269	-84.27
			12.97	0.146	0.000299	-157.13	0.000413	-95.14
			19.35	0.217	0.000344	161.38	0.000669	-126.23
			25.35	0.284	0.000298	136.38	0.000711	-144.74
			31.58	0.354	0.000253	122.40	0.000705	-153.56
			37.77	0.423	0.000233	114.81	0.000714	-157.26
			44.25	0.497	0.000234	105.79	0.000740	-159.49
			49.90	0.561	0.000250	78.83	0.000782	-162.75
			56.83	0.639	0.000161	60.24	0.000824	-164.81
			62.45	0.701	0.000155	76.76	0.000841	-169.73
			74.66	0.837	0.000170	68.12	0.000981	-165.53
850.	0.1	12.	0.63	0.007	0.000012	-93.66	0.000022	-79.87
			1.35	0.015	0.000033	-82.67	0.000033	-96.58
			2.12	0.024	0.000044	-98.33	0.000037	-91.49
			3.20	0.036	0.000079	-103.48	0.000081	-89.67
			4.87	0.055	0.000124	-111.42	0.000126	-88.55
			6.50	0.073	0.000161	-119.34	0.000177	-88.27
			9.51	0.107	0.000242	-137.81	0.000302	-93.43
			12.65	0.142	0.000307	-159.62	0.000453	-103.70
			19.13	0.214	0.000337	164.13	0.000666	-127.79
			25.13	0.282	0.000311	142.48	0.000734	-141.27
			31.62	0.354	0.000269	122.26	0.000763	-151.68
			37.19	0.417	0.000241	112.89	0.000784	-155.75
			44.09	0.494	0.000231	103.00	0.000810	-159.35
			49.93	0.559	0.000204	70.74	0.000843	-162.83
			56.47	0.632	0.000098	64.19	0.000900	-163.99
			62.24	0.698	0.000113	90.32	0.000946	-170.14
			74.75	0.839	0.000106	110.44	0.001098	-164.16

TABLE B-I. CONCLUDED.

RPM	μ	θ_o	ω rad/sec	ω/Ω	$\frac{C_m/a\sigma}{\partial\phi}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.	$\frac{C_l/a\sigma}{\partial\phi}$ Mag.	$\frac{1}{\text{Deg.}}$ Phs.
850.	0.26	1.	0.64	0.007	0.000012	23.04	0.000019	-101.36
			1.24	0.014	0.000034	-81.77	0.000022	-104.63
			1.89	0.021	0.000042	-71.62	0.000039	-99.01
			3.10	0.035	0.000057	-99.96	0.000060	-91.16
			4.95	0.056	0.000087	-108.58	0.000098	-89.19
			6.65	0.075	0.000107	-114.76	0.000122	-89.79
			9.67	0.109	0.000165	-132.22	0.000206	-94.55
			12.61	0.142	0.000209	-145.59	0.000295	-97.32
			18.96	0.213	0.000274	-175.04	0.000479	-110.48
			25.05	0.282	0.000294	160.66	0.000624	-124.16
			31.27	0.352	0.000287	139.52	0.000727	-135.78
			37.10	0.416	0.000270	126.15	0.000782	-143.90
			43.97	0.494	0.000259	110.16	0.000832	-151.85
			49.86	0.560	0.000269	94.15	0.000886	-157.20
			56.53	0.635	0.000151	78.25	0.000912	-160.84
			62.17	0.699	0.000172	77.63	0.000904	-167.05
			74.78	0.840	0.000180	64.21	0.001057	-165.96
850.	0.26	12.	1.12	0.013	0.000091	178.13	0.000061	-69.69
			1.24	0.014	0.000025	-78.80	0.000035	-89.07
			1.94	0.022	0.000038	-92.25	0.000043	-111.60
			3.25	0.037	0.000072	-97.40	0.000084	-91.87
			4.89	0.055	0.000115	-108.86	0.000126	-89.71
			6.40	0.072	0.000146	-115.17	0.000161	-93.04
			9.67	0.109	0.000220	-131.86	0.000273	-96.03
			12.60	0.142	0.000278	-147.07	0.000397	-100.45
			19.26	0.217	0.000354	179.82	0.000654	-117.90
			25.09	0.282	0.000376	154.52	0.000814	-133.14
			31.65	0.357	0.000333	129.29	0.000867	-146.84
			37.68	0.424	0.000290	116.66	0.000881	-153.09
			44.02	0.496	0.000278	103.92	0.000925	-159.40
			49.88	0.562	0.000289	86.37	0.000974	-162.77
			56.65	0.638	0.000118	58.84	0.001011	-165.20
			62.21	0.702	0.000097	90.74	0.001060	-172.83
			74.57	0.840	0.000097	123.98	0.001198	-166.50

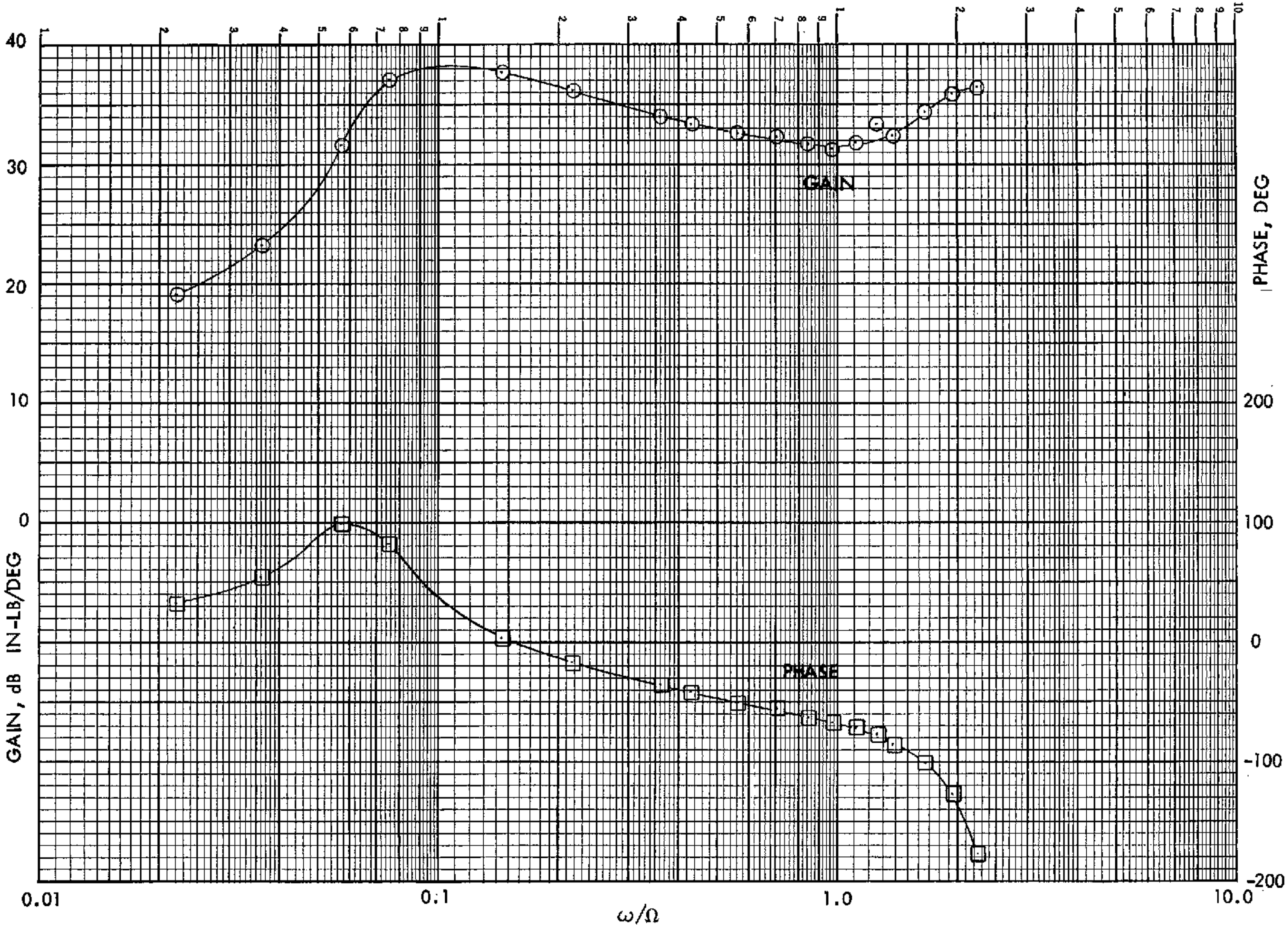

Figure B-1. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0$, $\theta_o = 0^\circ$.

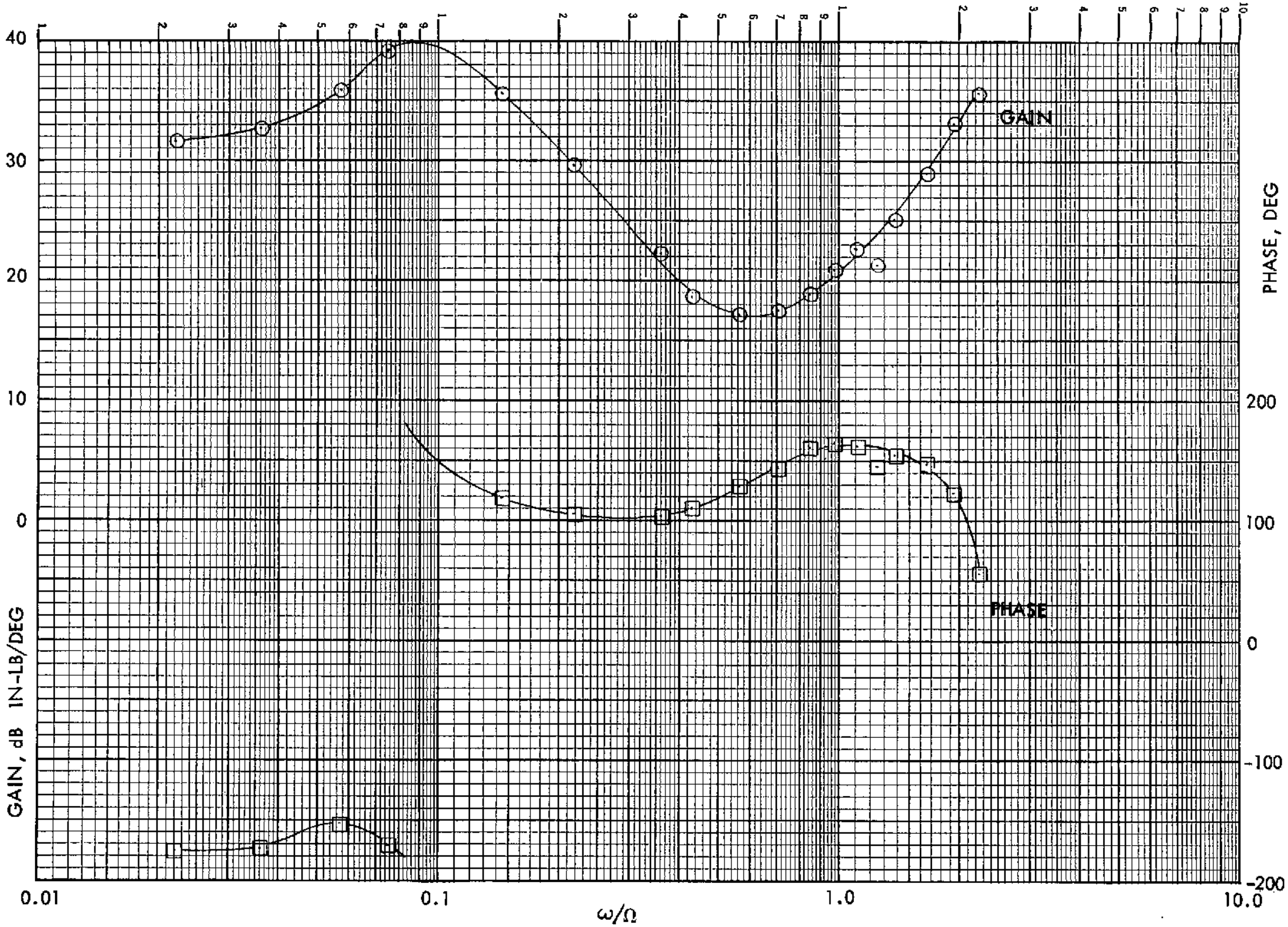

Figure B-2. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0$, $\theta_o = 0^o$.

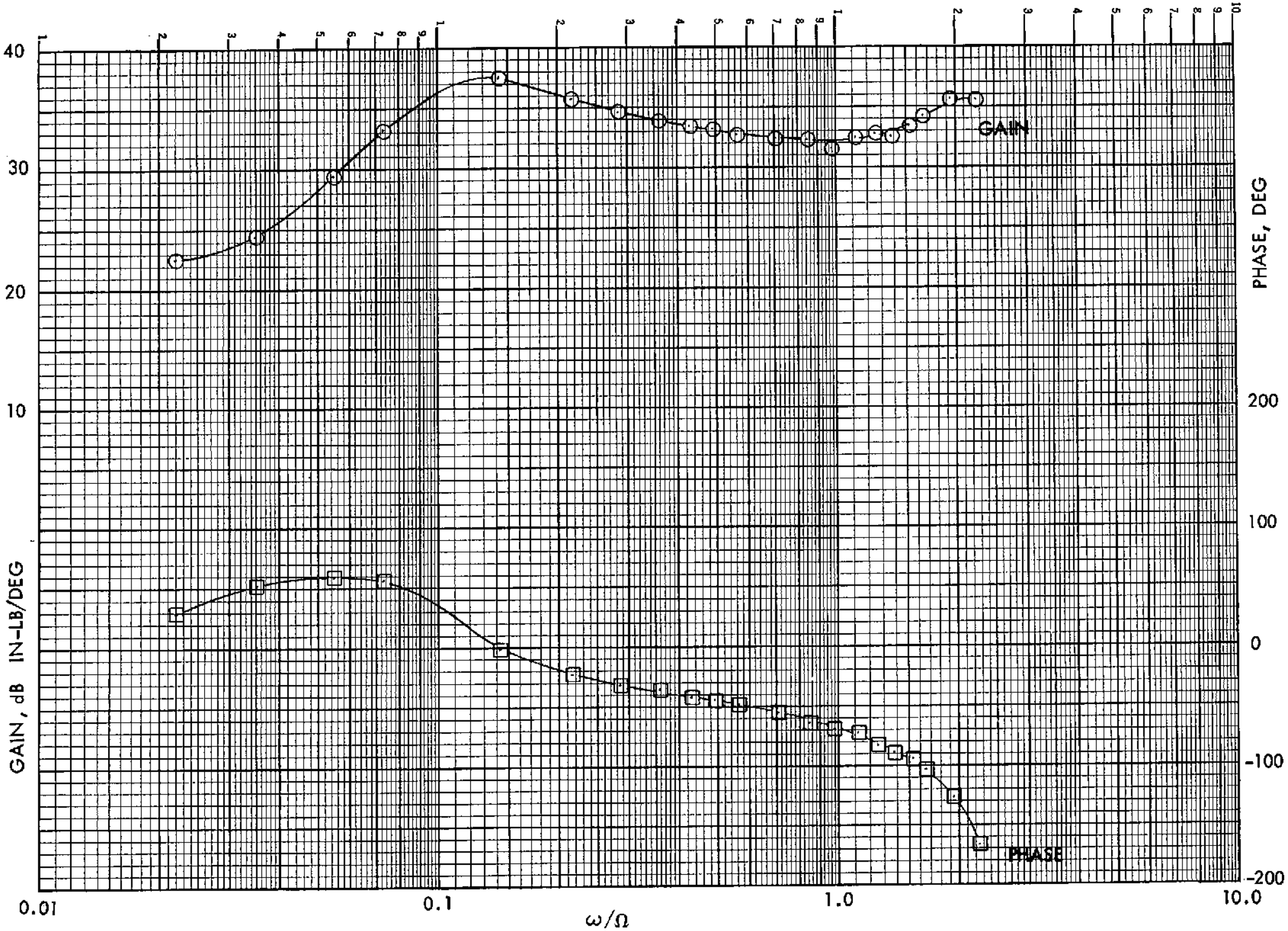

Figure B-3. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0$, $\theta_o = 2^o$.

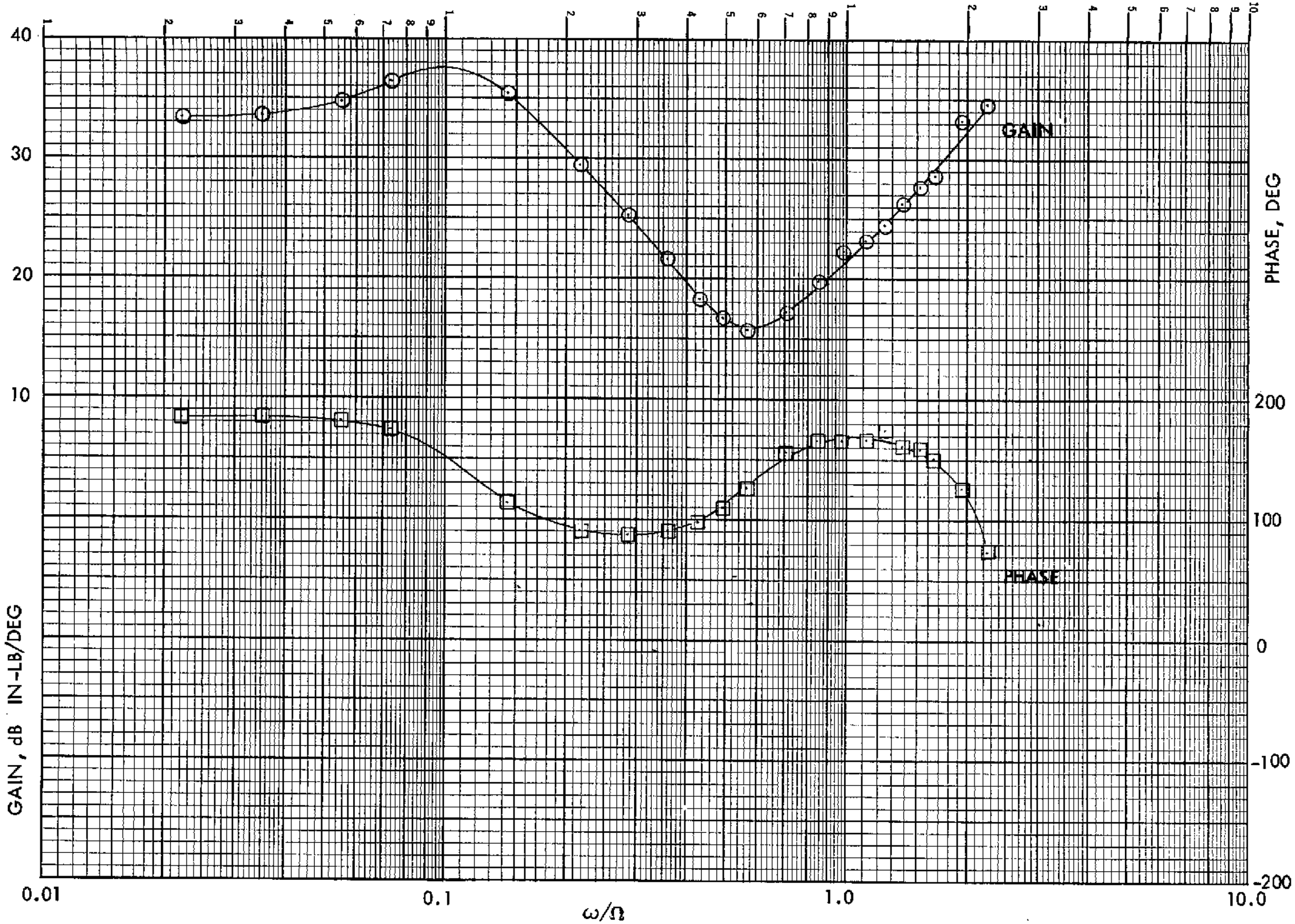

Figure B-4. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0$, $\theta_o = 2^\circ$.

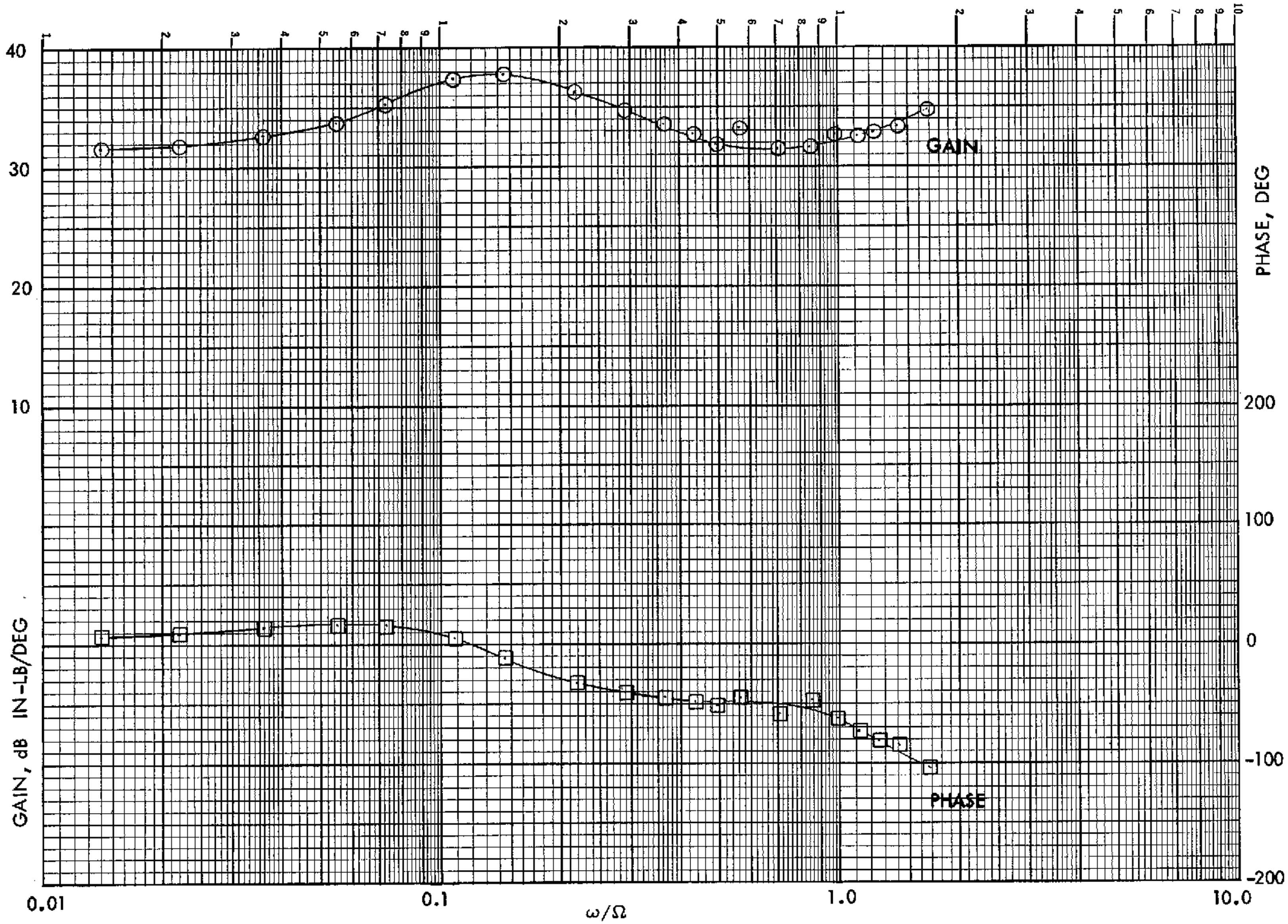

Figure B-5. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0$, $\theta_o = 4^\circ$.

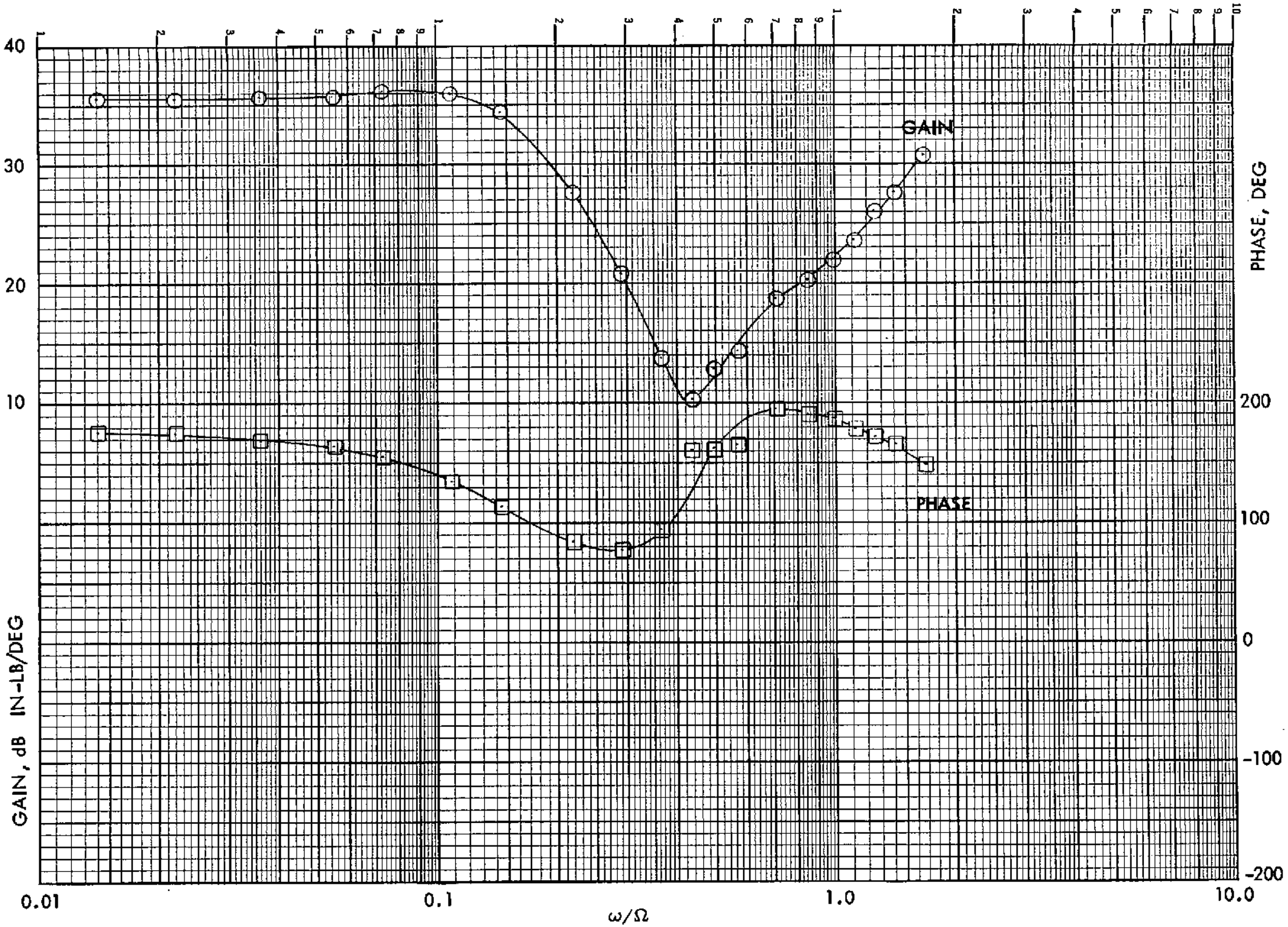

Figure B-6. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0$, $\theta_o = 4^{\circ}$.

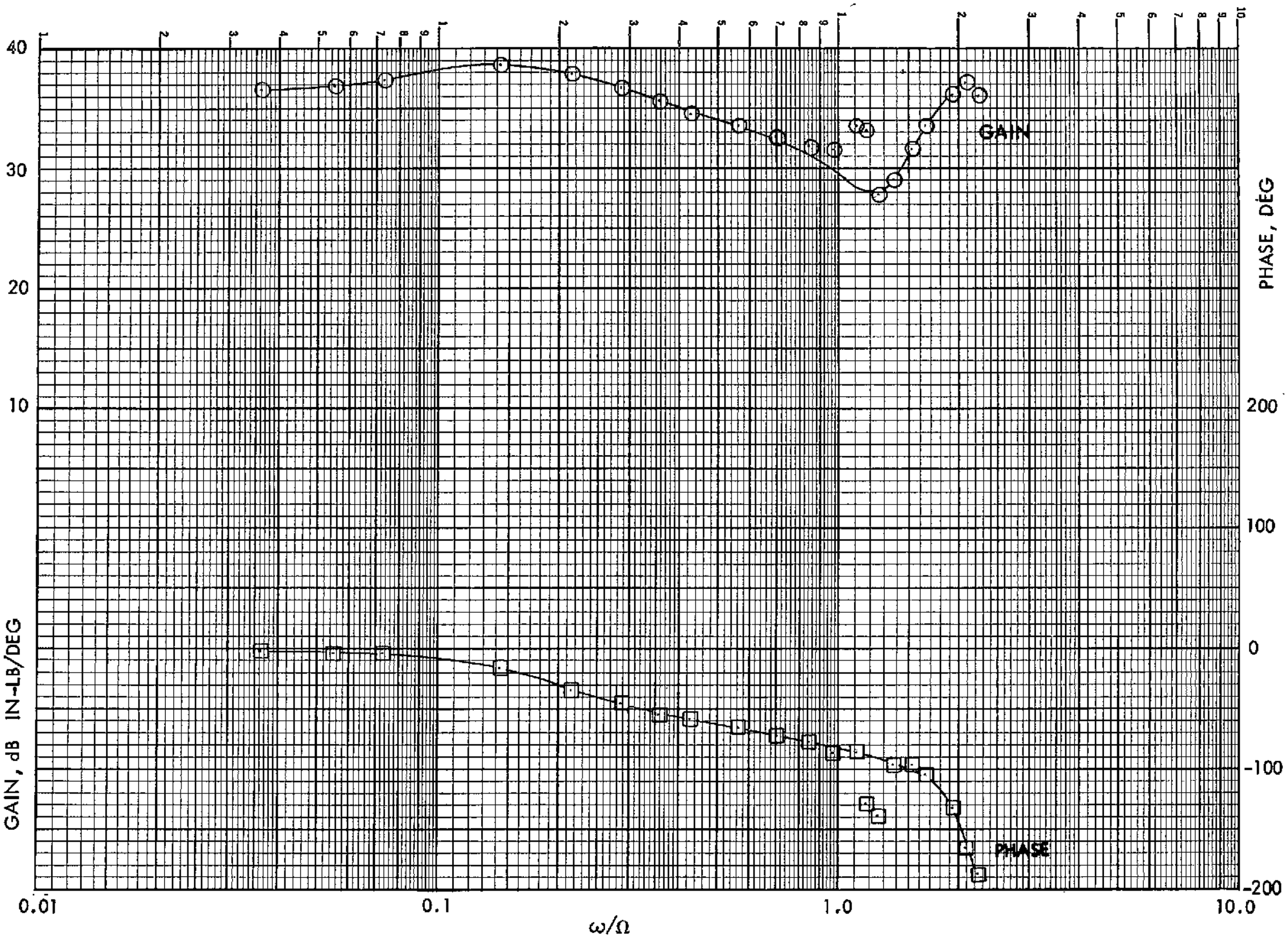

Figure B-7. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0$, $\theta_o = 16^{\circ}$.

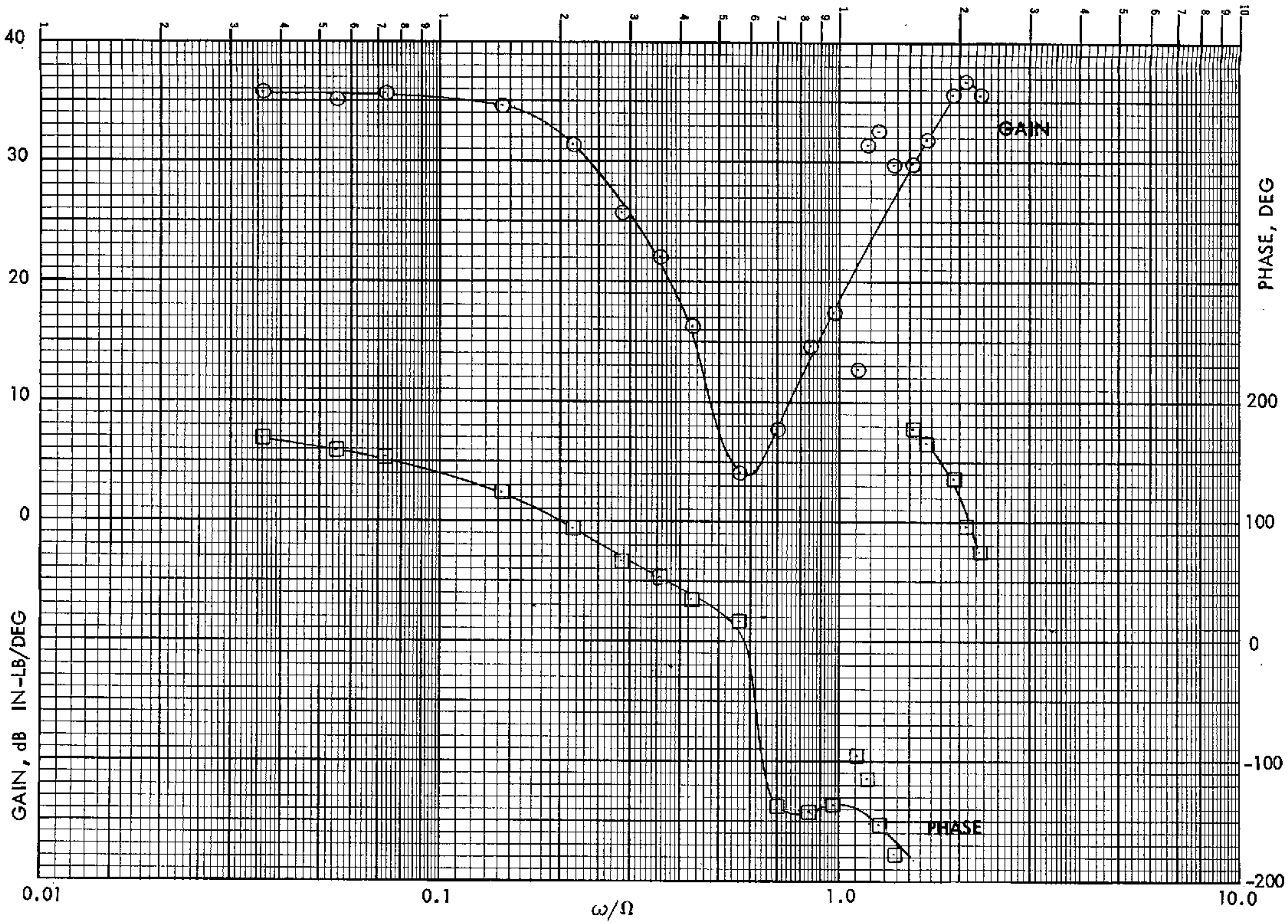

Figure B-8. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0$, $\theta_o = 16^\circ$.

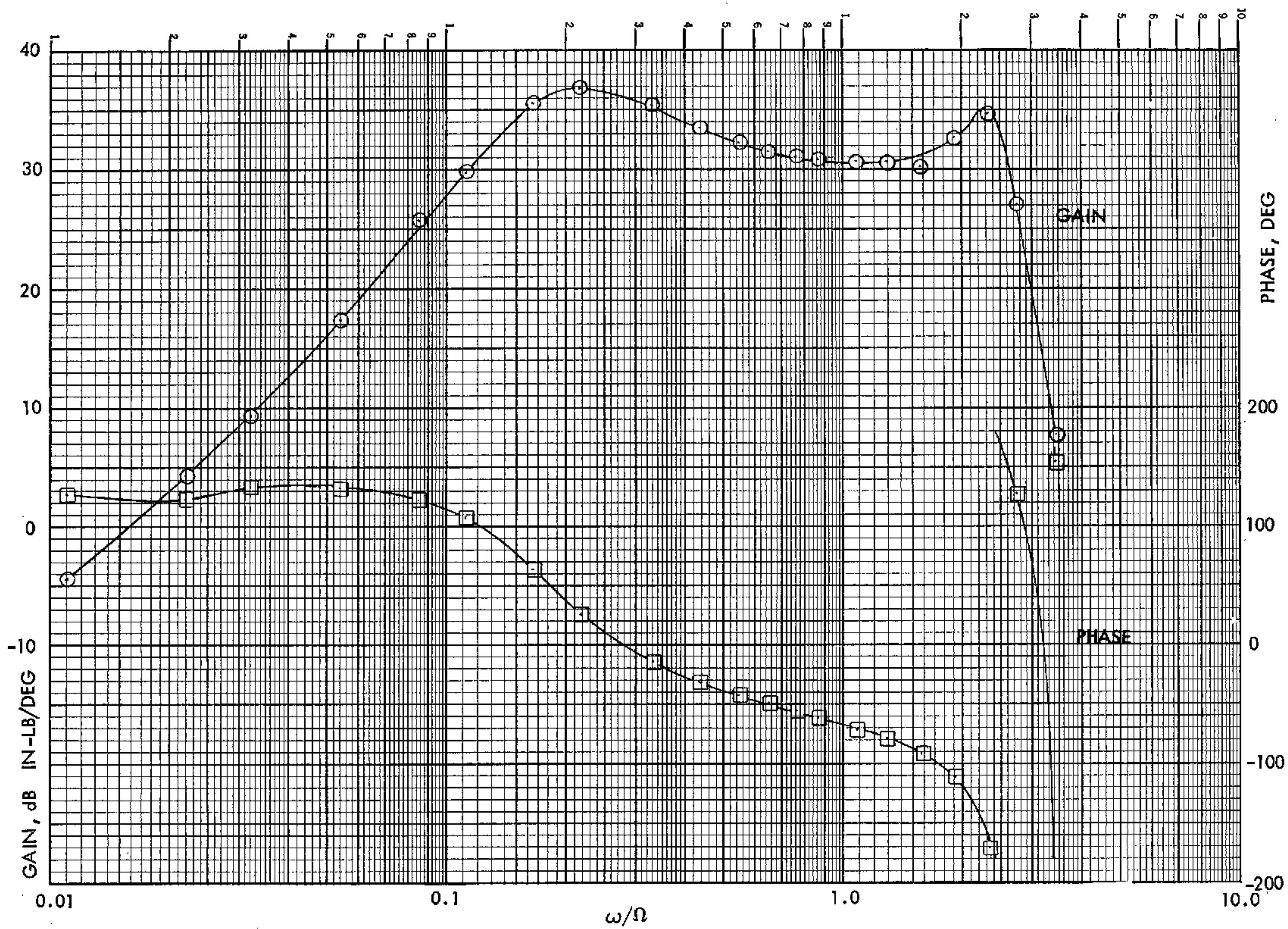

Figure B-9. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 550 RPM, $\mu = 0$, $\theta_o = 0^\circ$.

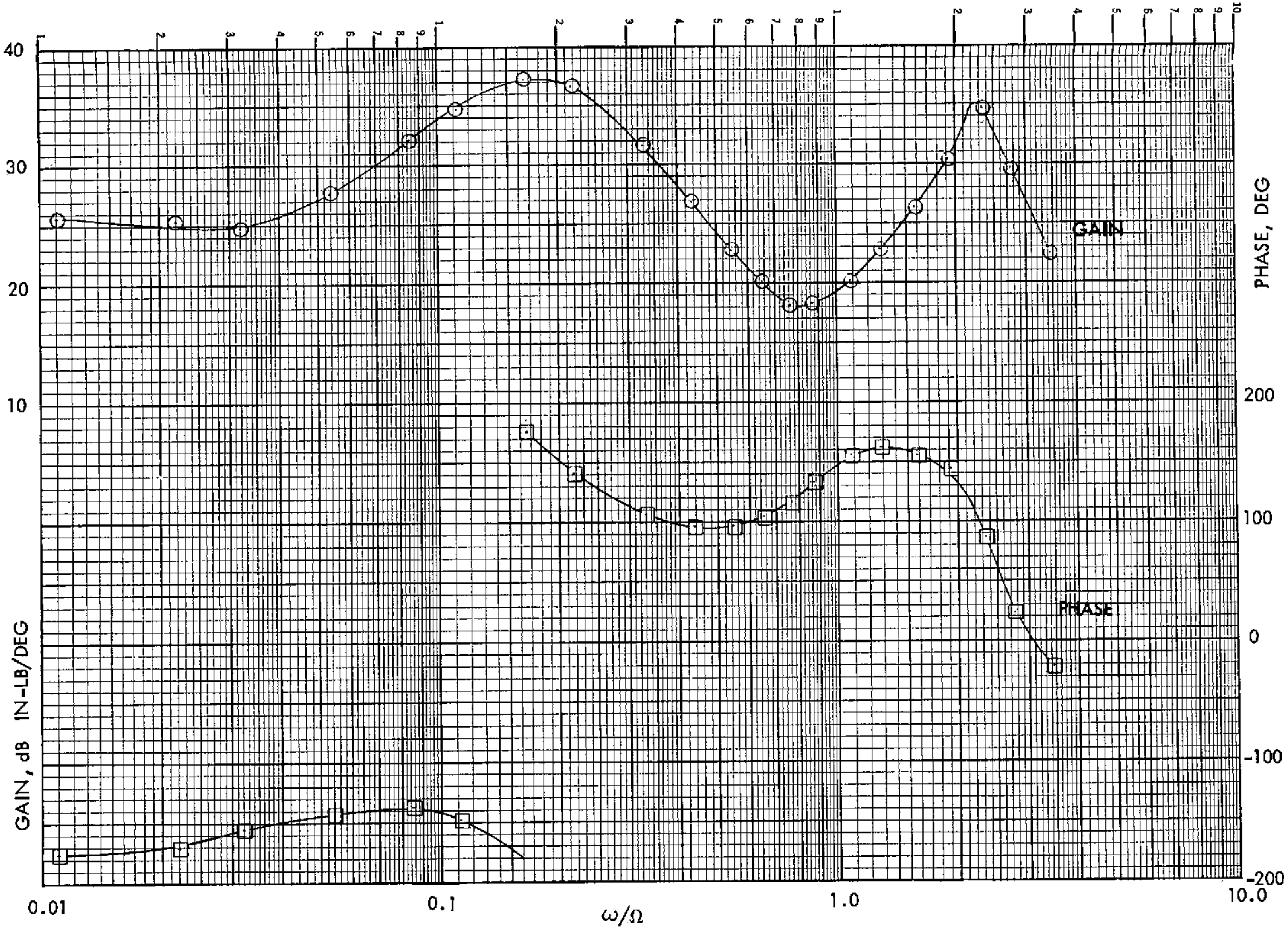

Figure B-10. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 550 RPM, $\mu = 0$, $\theta_o = 0^{\circ}$.

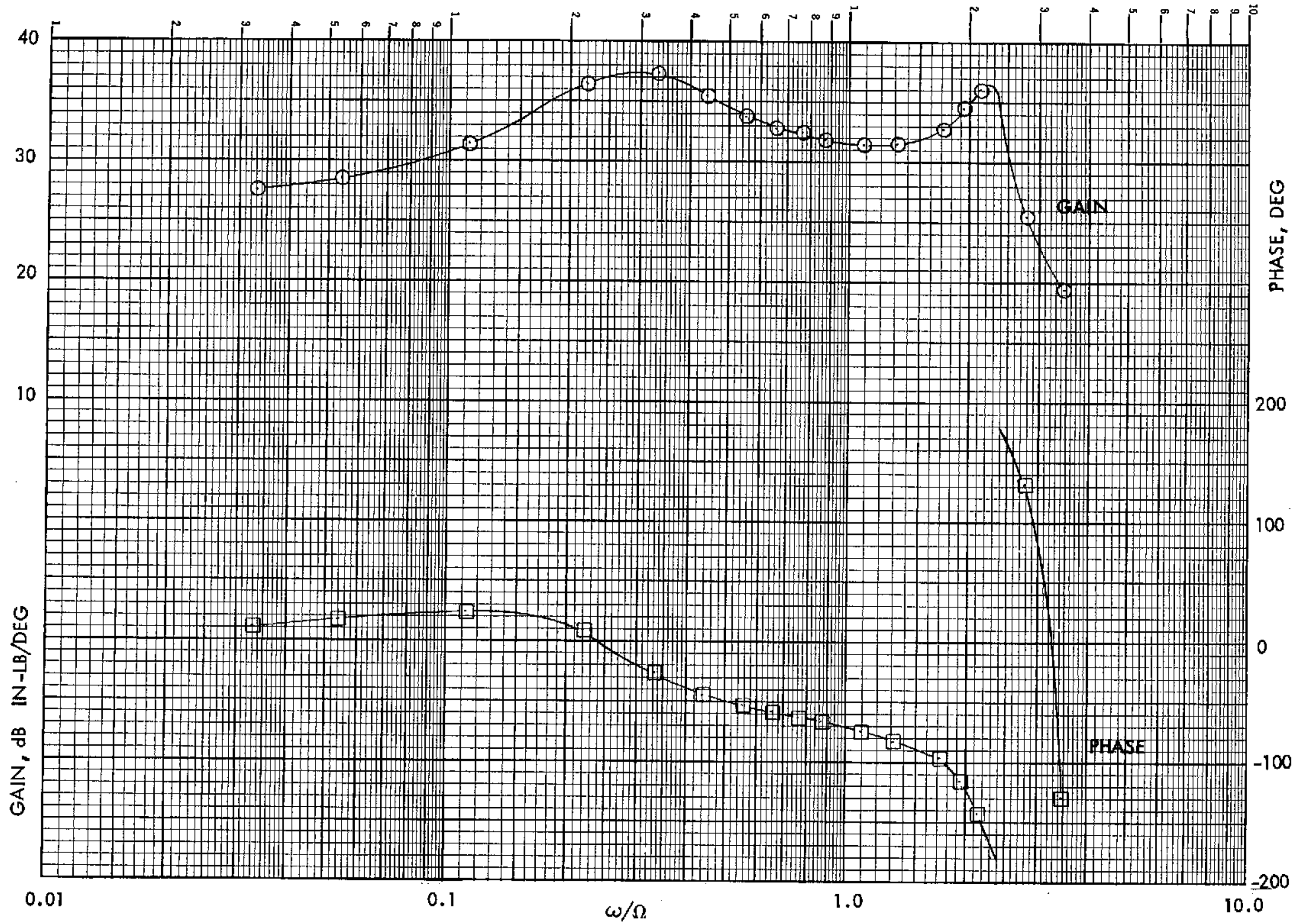

Figure B-11. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 550 RPM, $\mu = 0$, $\theta_o = 8^\circ$.

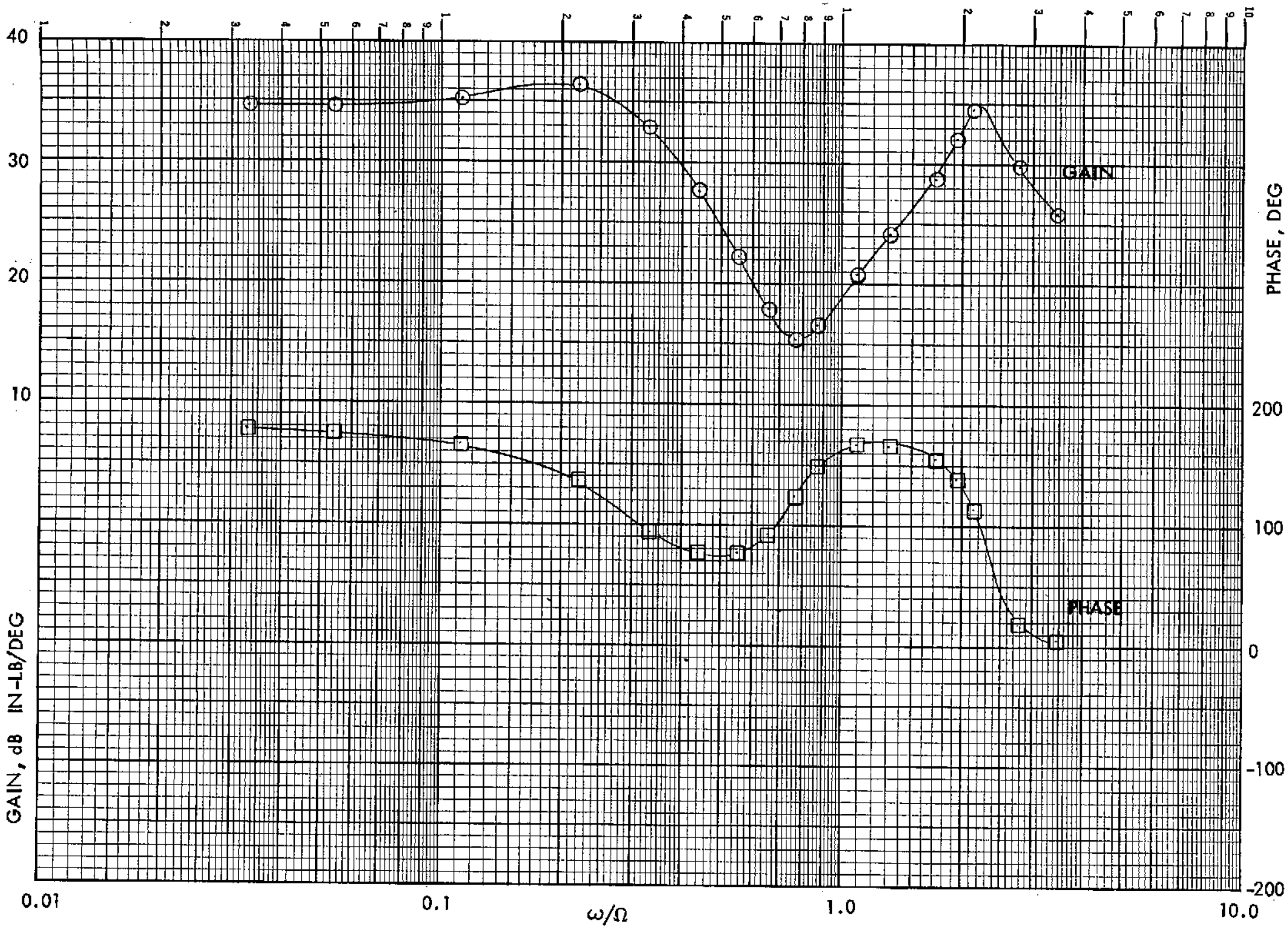

Figure B-12. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 550 RPM, $\mu = 0$, $\theta_o = 8^o$.

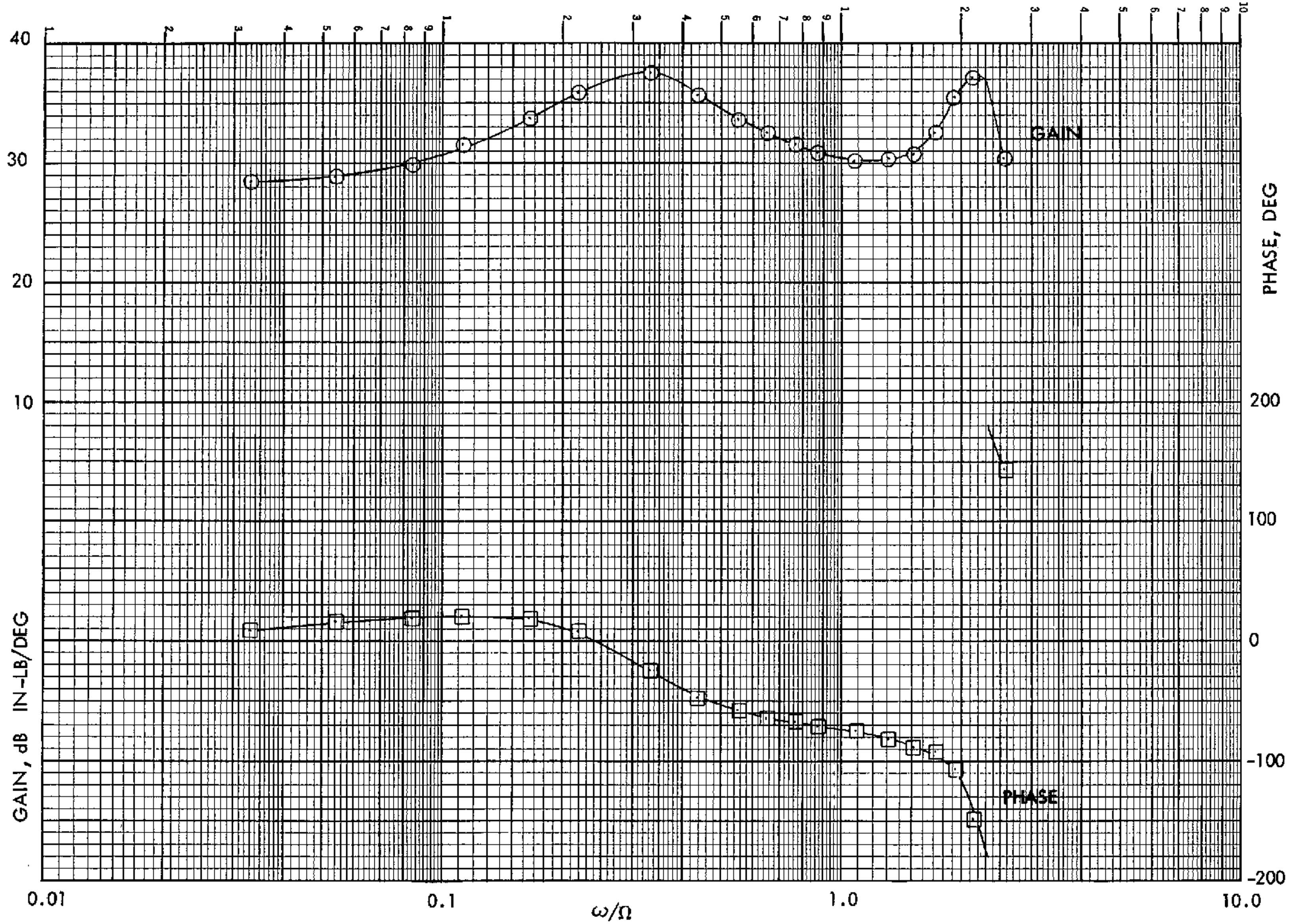

Figure B-13. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 550 RPM, $\mu = 0$, $\theta_o = 6°$.

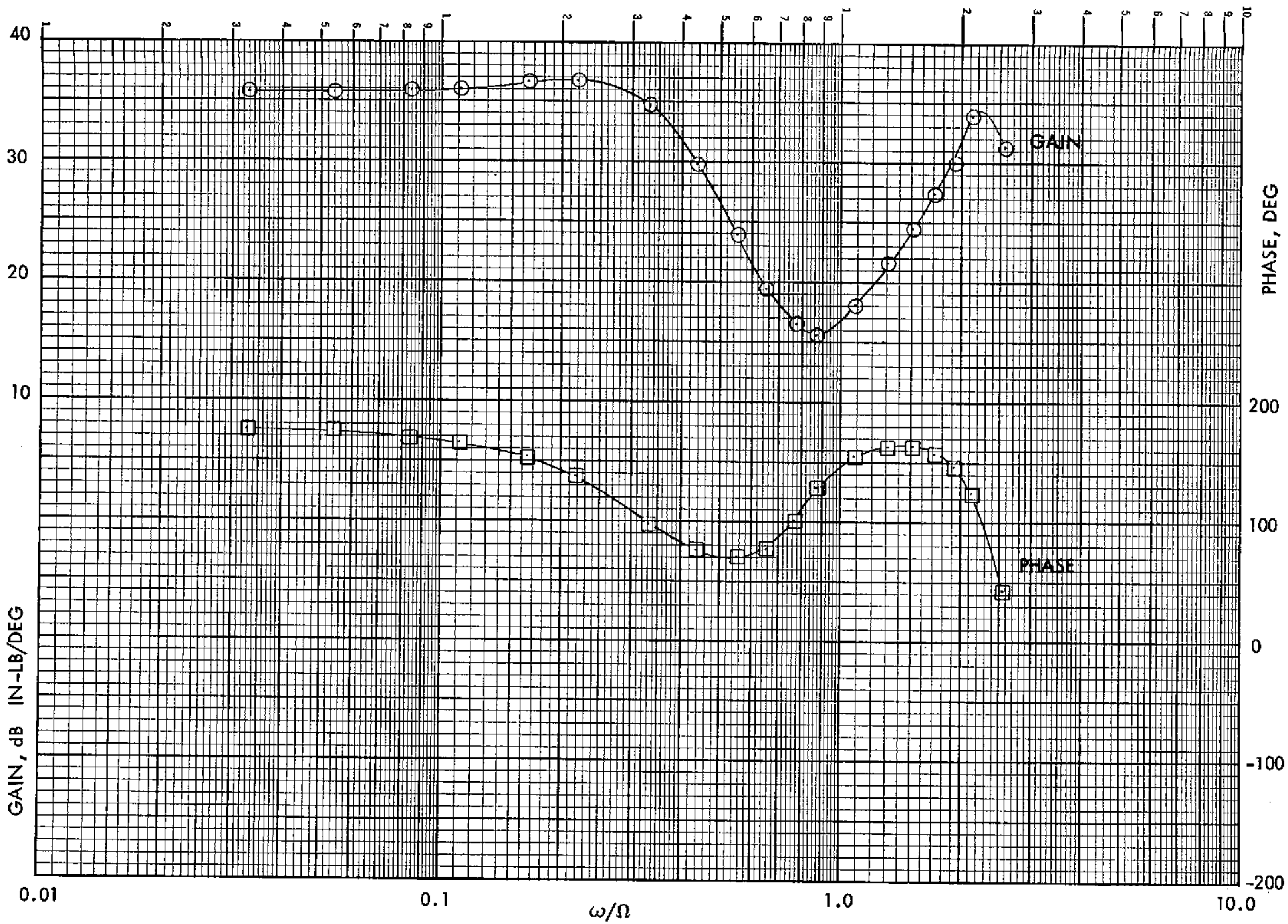

Figure B-14. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 550 RPM, $\mu = 0$, $\theta_o = 6^\circ$.

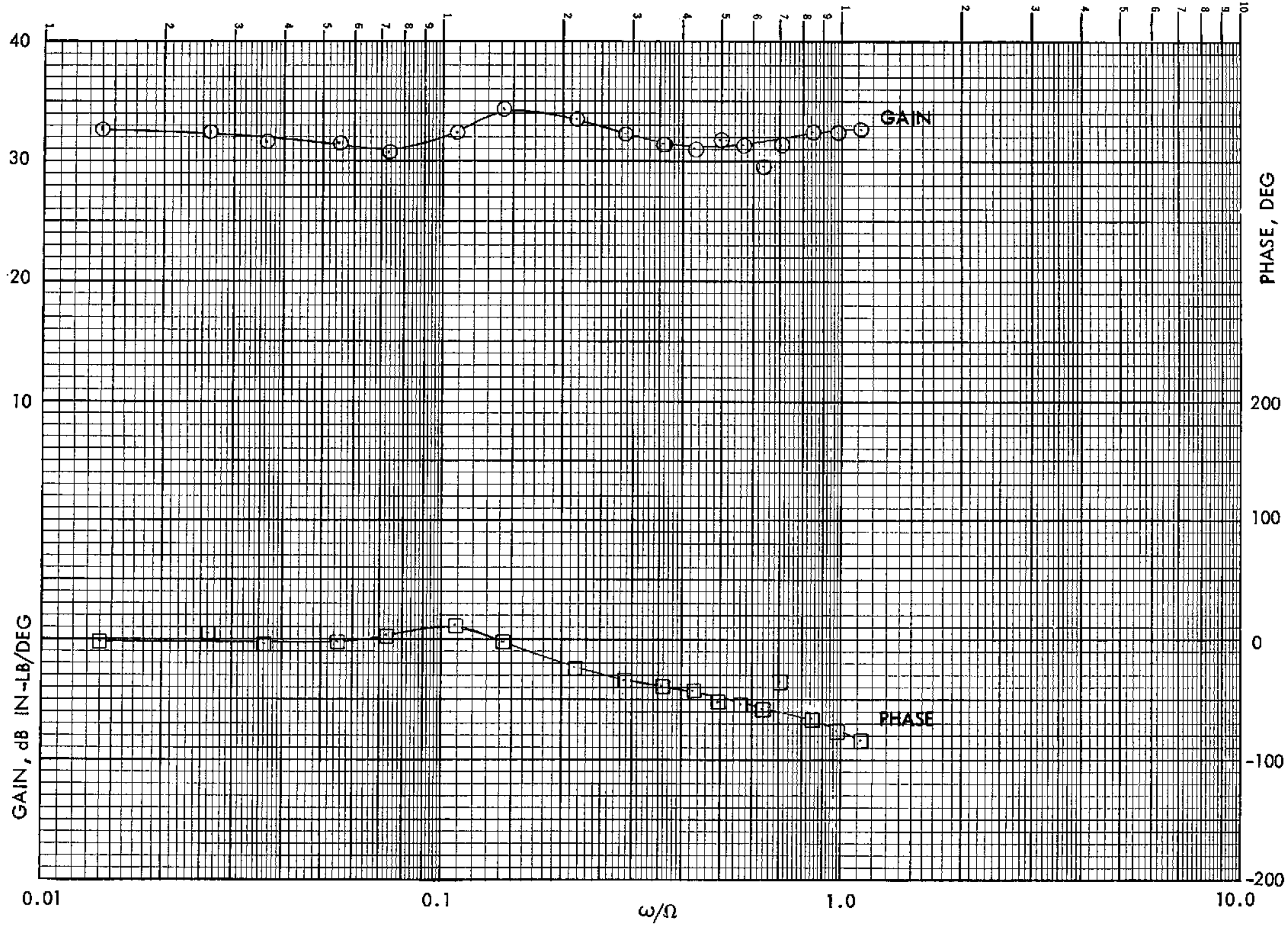

Figure B-15. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.05$, $\theta_o = 1^\circ$.

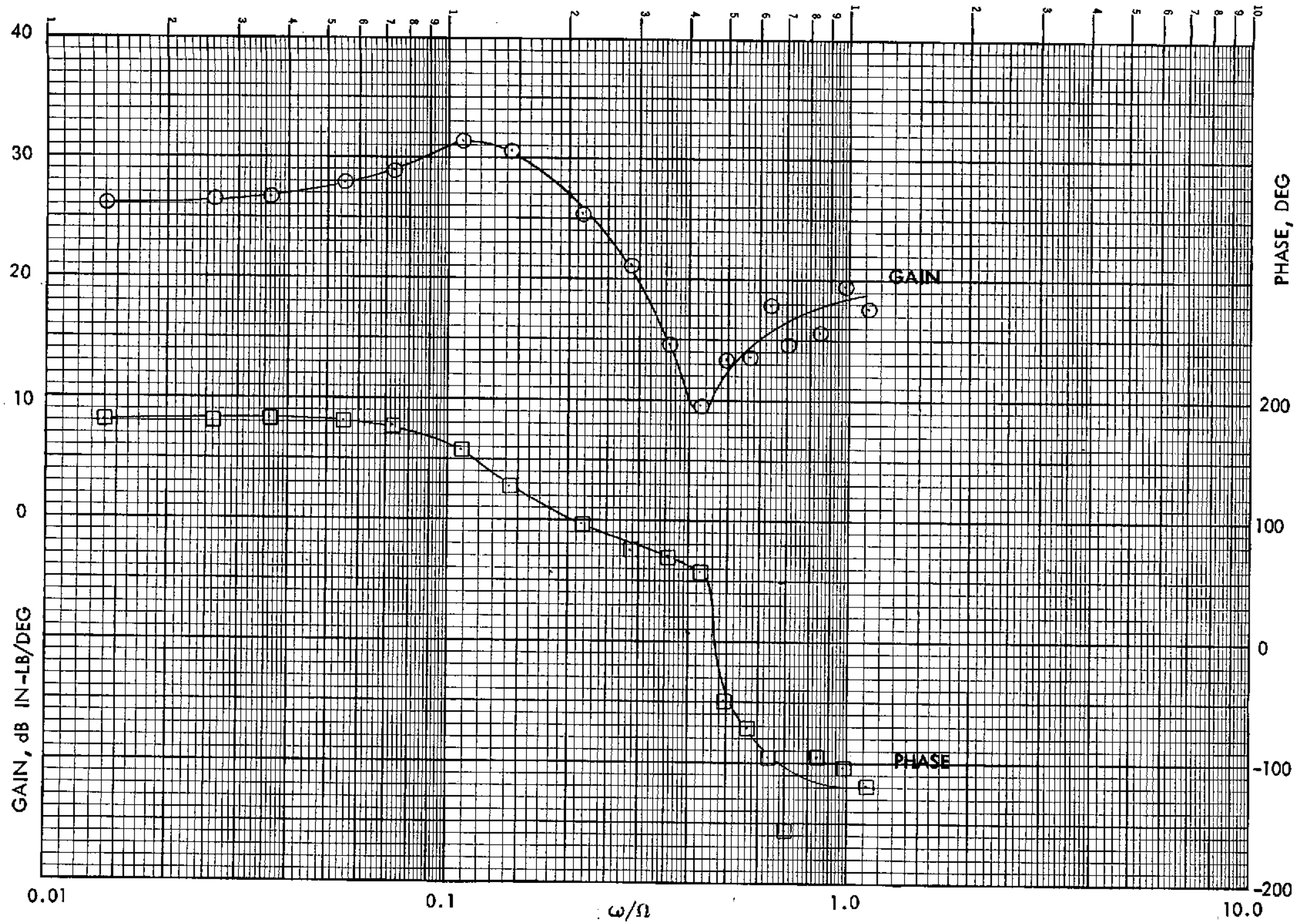

Figure B-16. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.05$, $\theta_o = 1^{\circ}$.

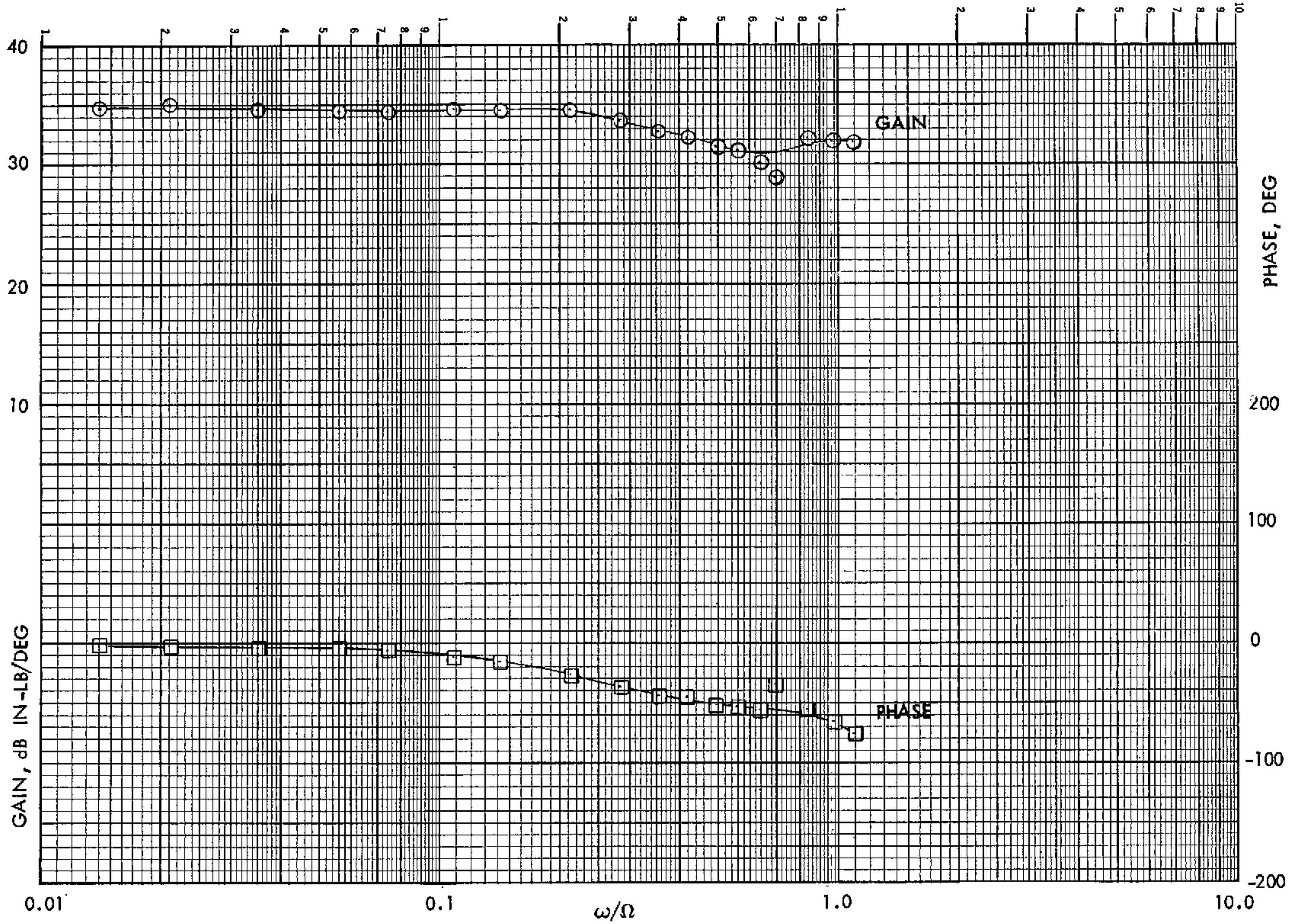

Figure B-17. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.1$, $\theta_o = 1^o$.

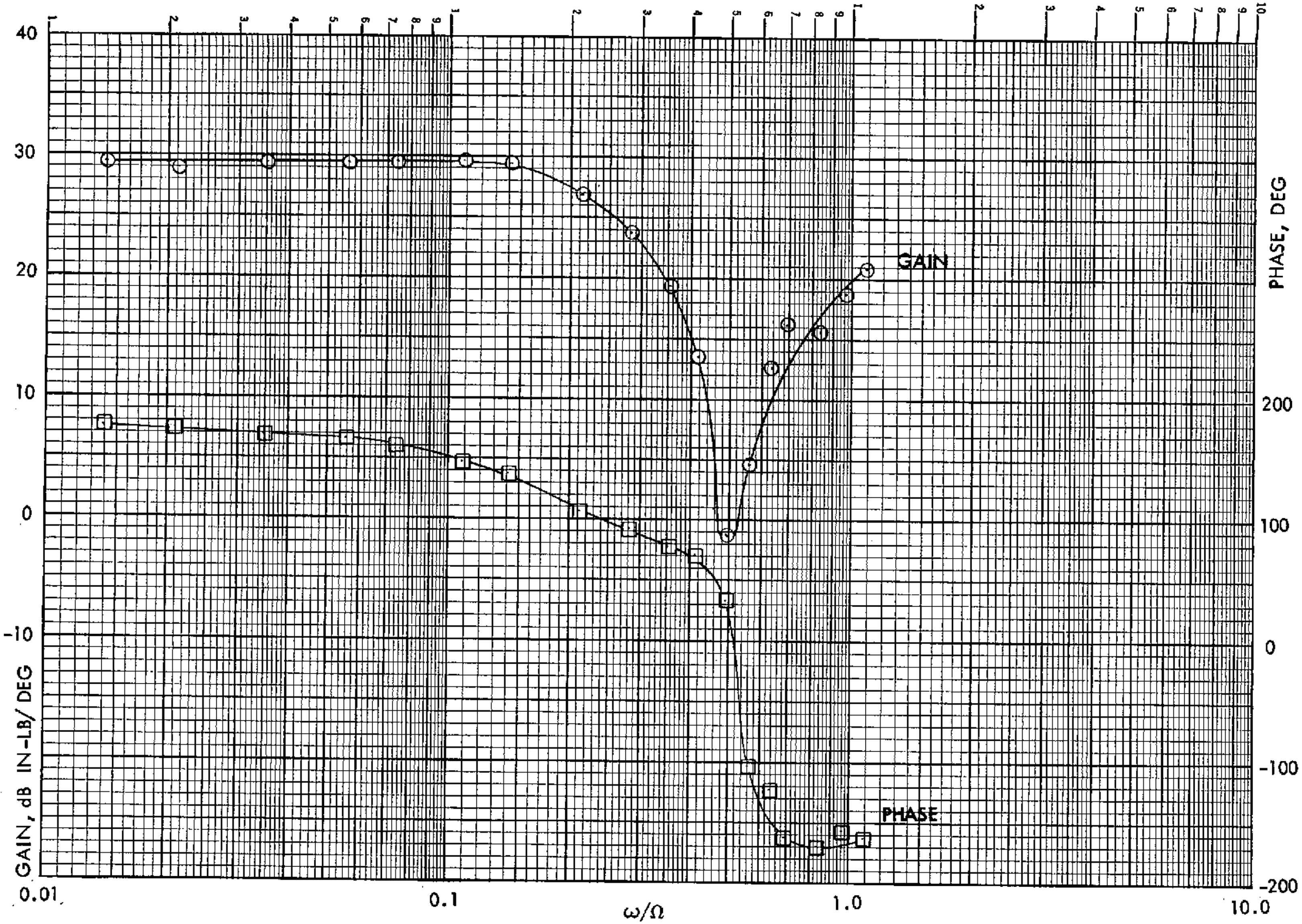

Figure B-18. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.1$, $\theta_o = 1^\circ$.

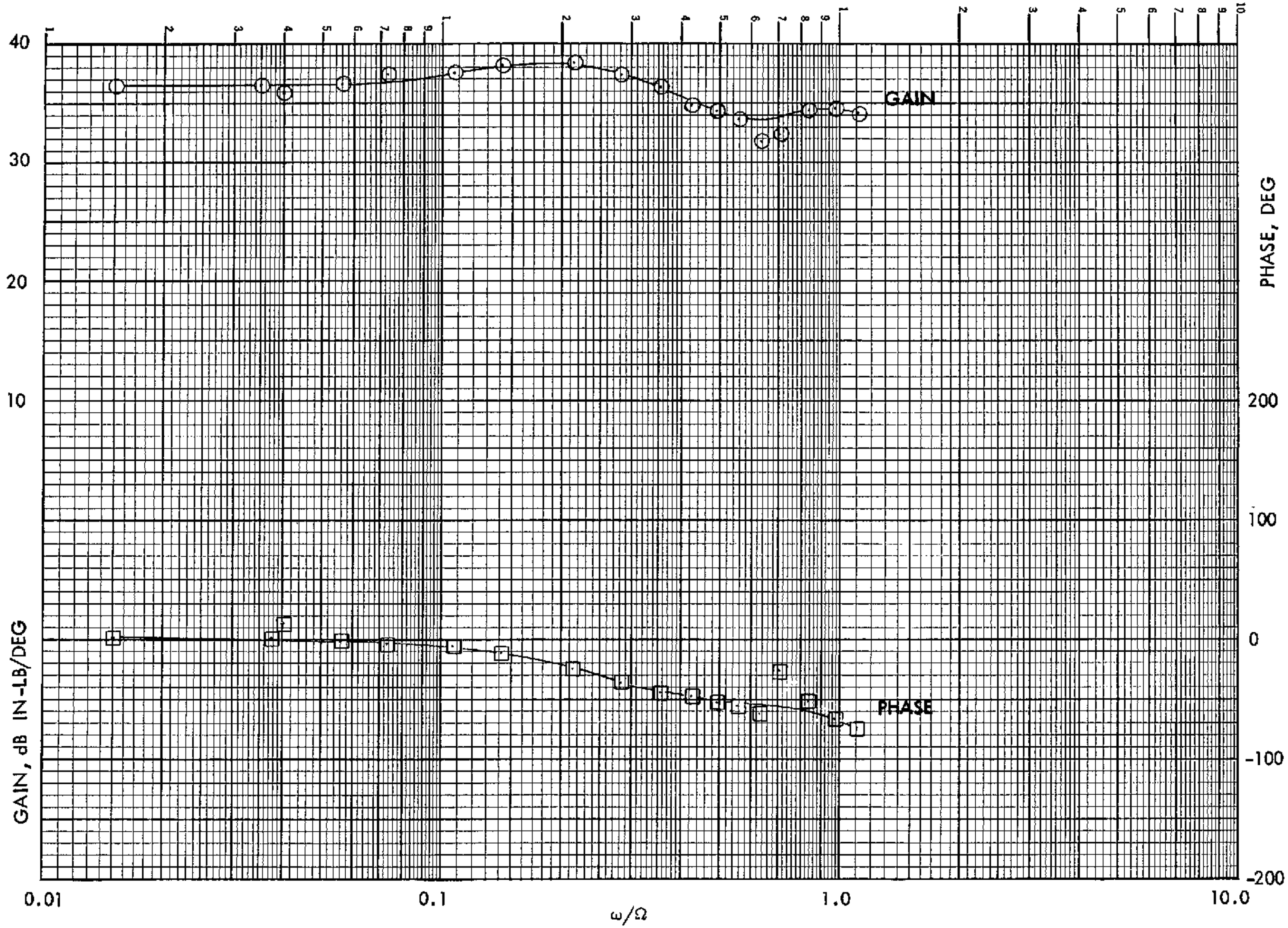

Figure B-19. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 550 RPM, $\mu = 0.1$, $\theta_o = 12^\circ$.

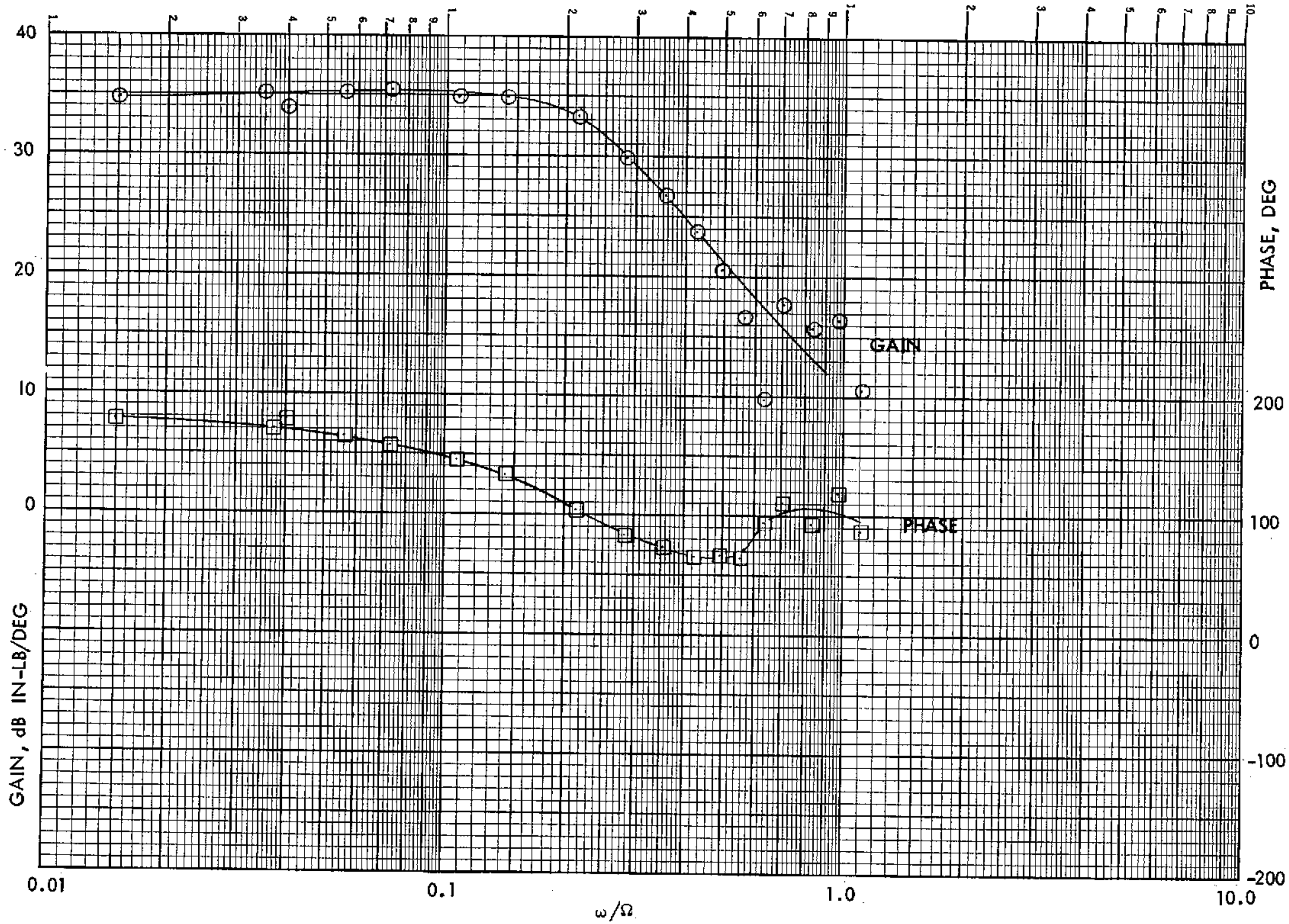

Figure B-20. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 550 RPM, $\mu = 0.1$, $\theta_o = 12^o$.

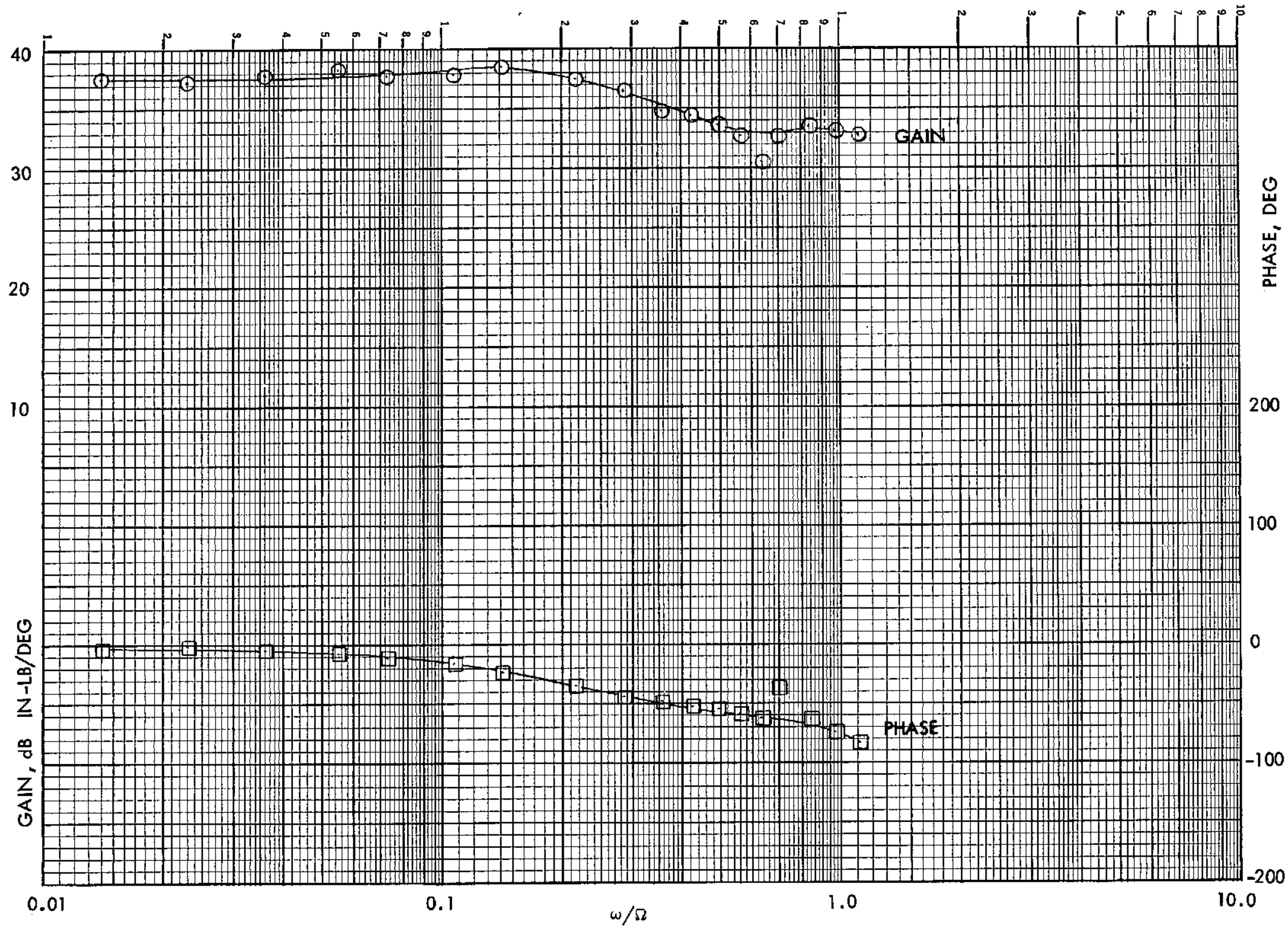

Figure B-21. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.15$, $\theta_o = 1^\circ$.

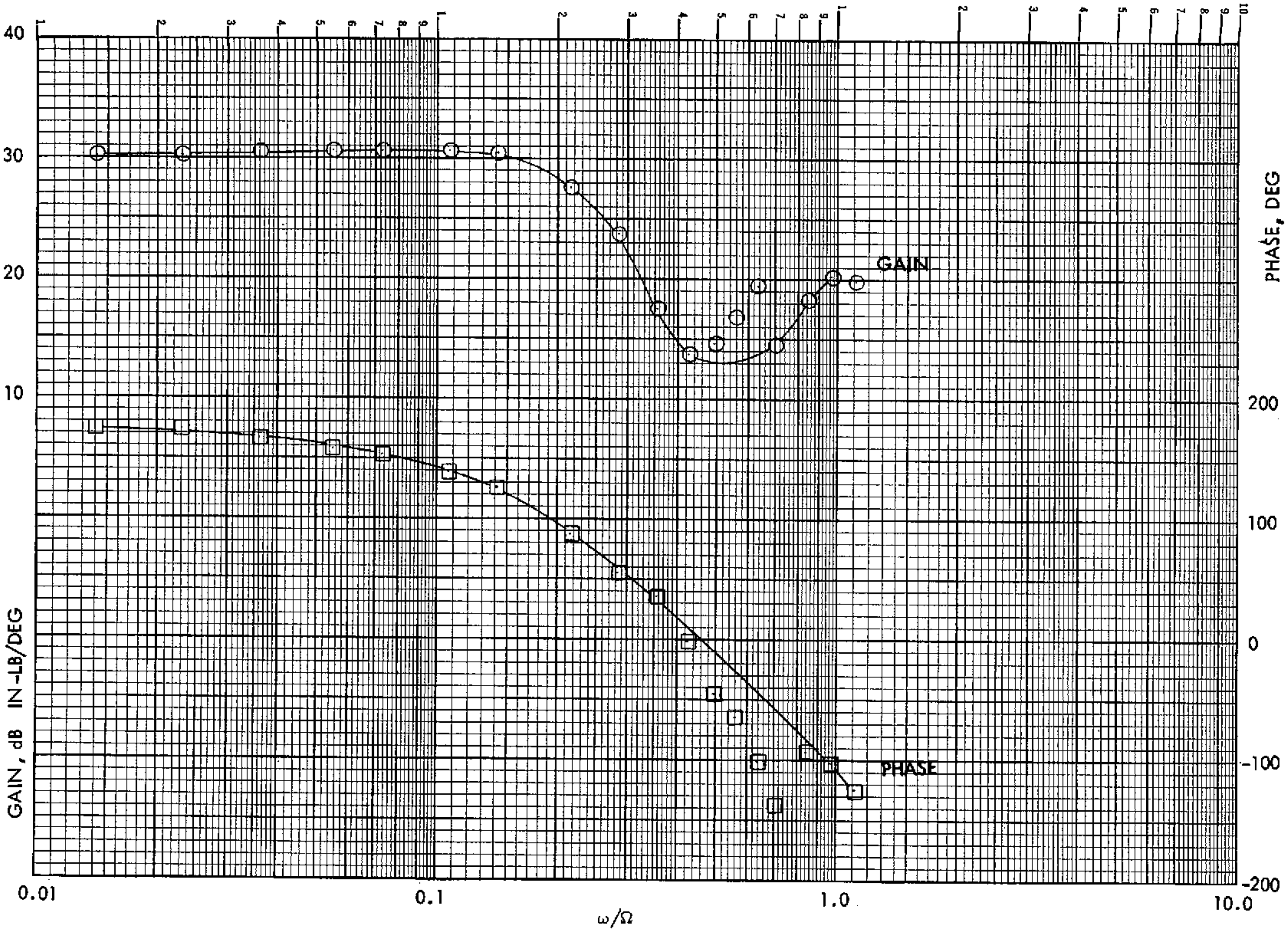

Figure B-22. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.15$, $\theta_o = 1^o$.

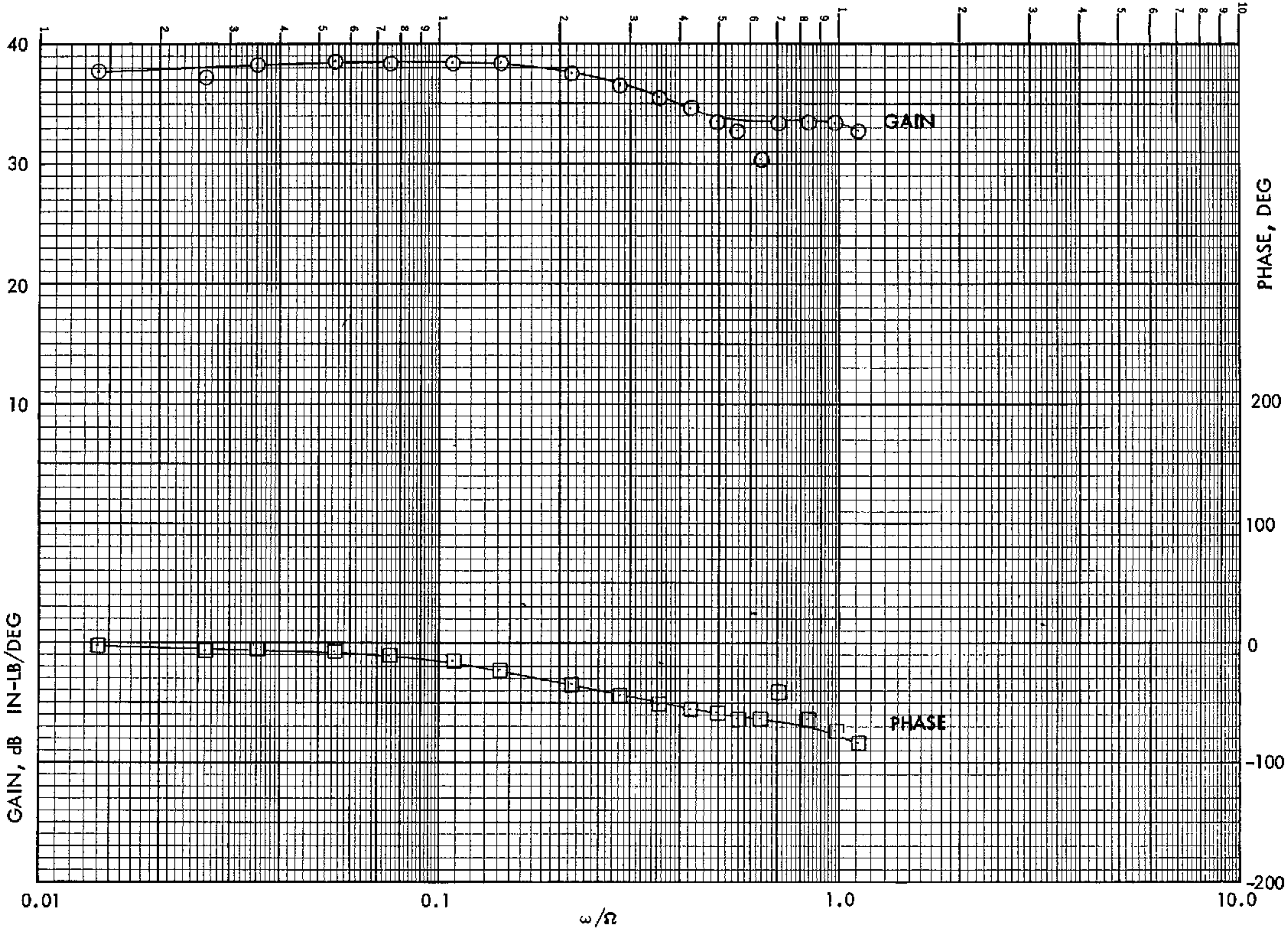

Figure B-23. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.2$, $\theta_o = 1^\circ$.

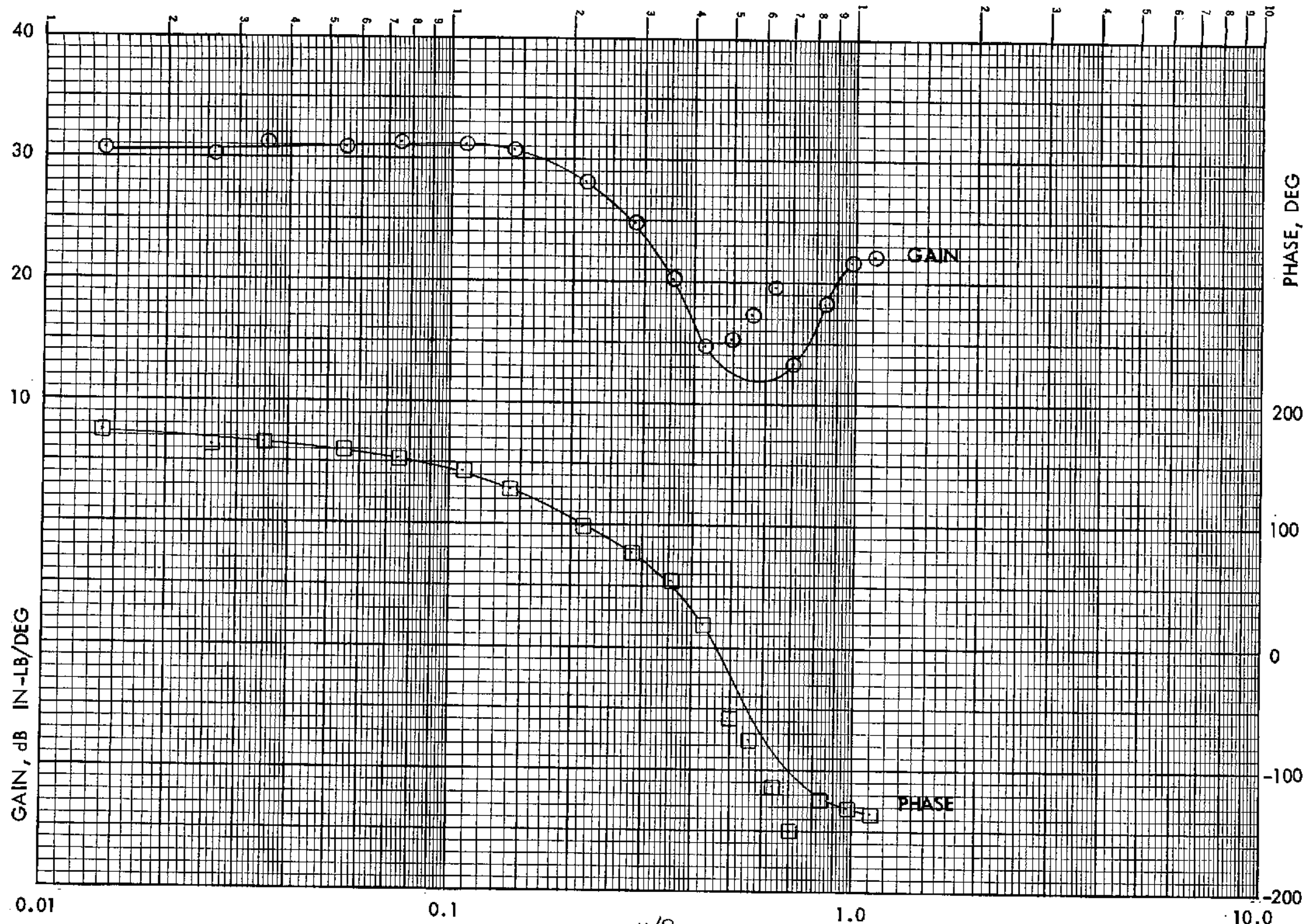

Figure B-24. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.2$, $\theta_o = 1^{\circ}$.

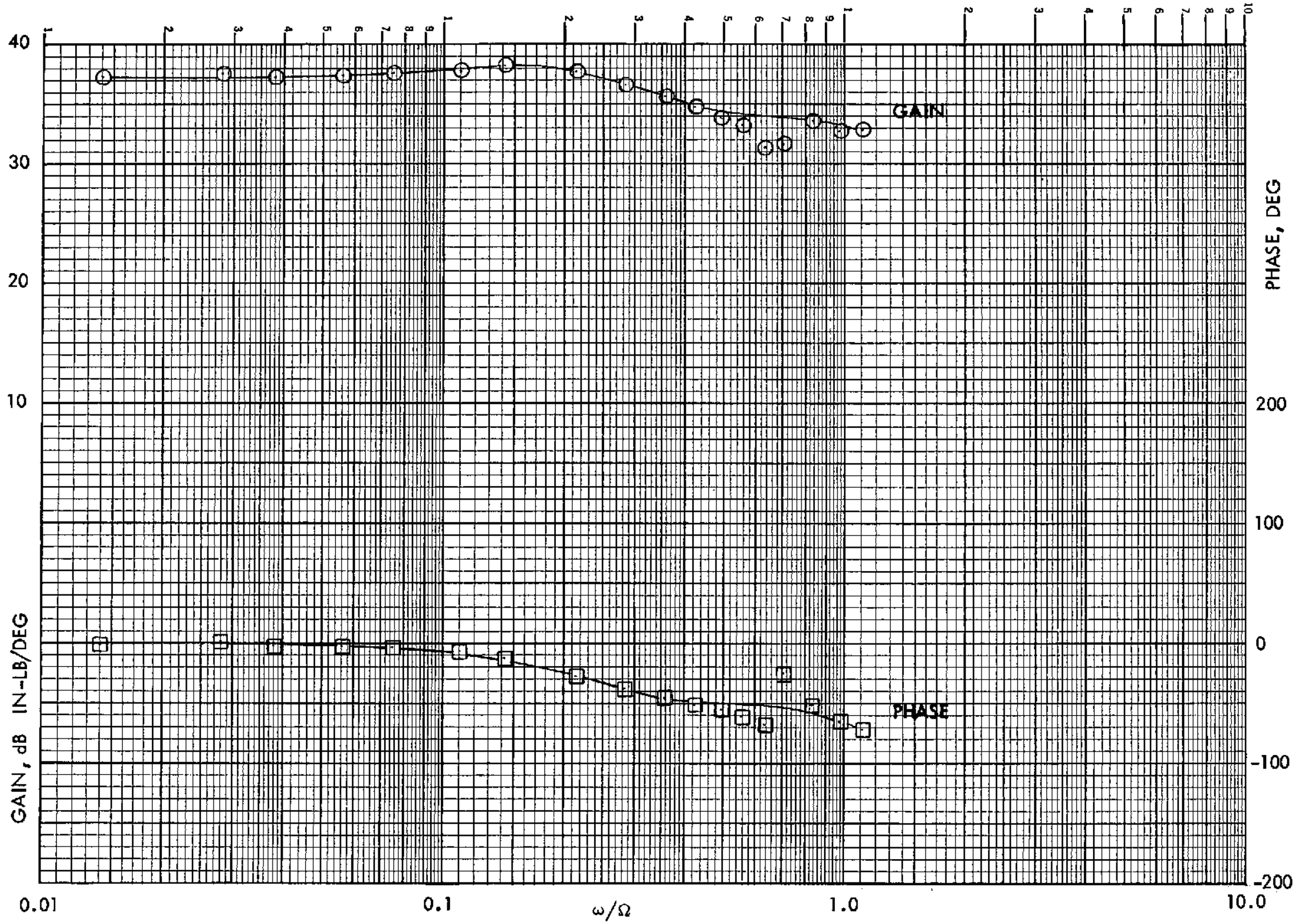

Figure B-25. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cycle Pitch. 850 RPM, $\mu = 0.2$, $\theta_o = 12^o$.

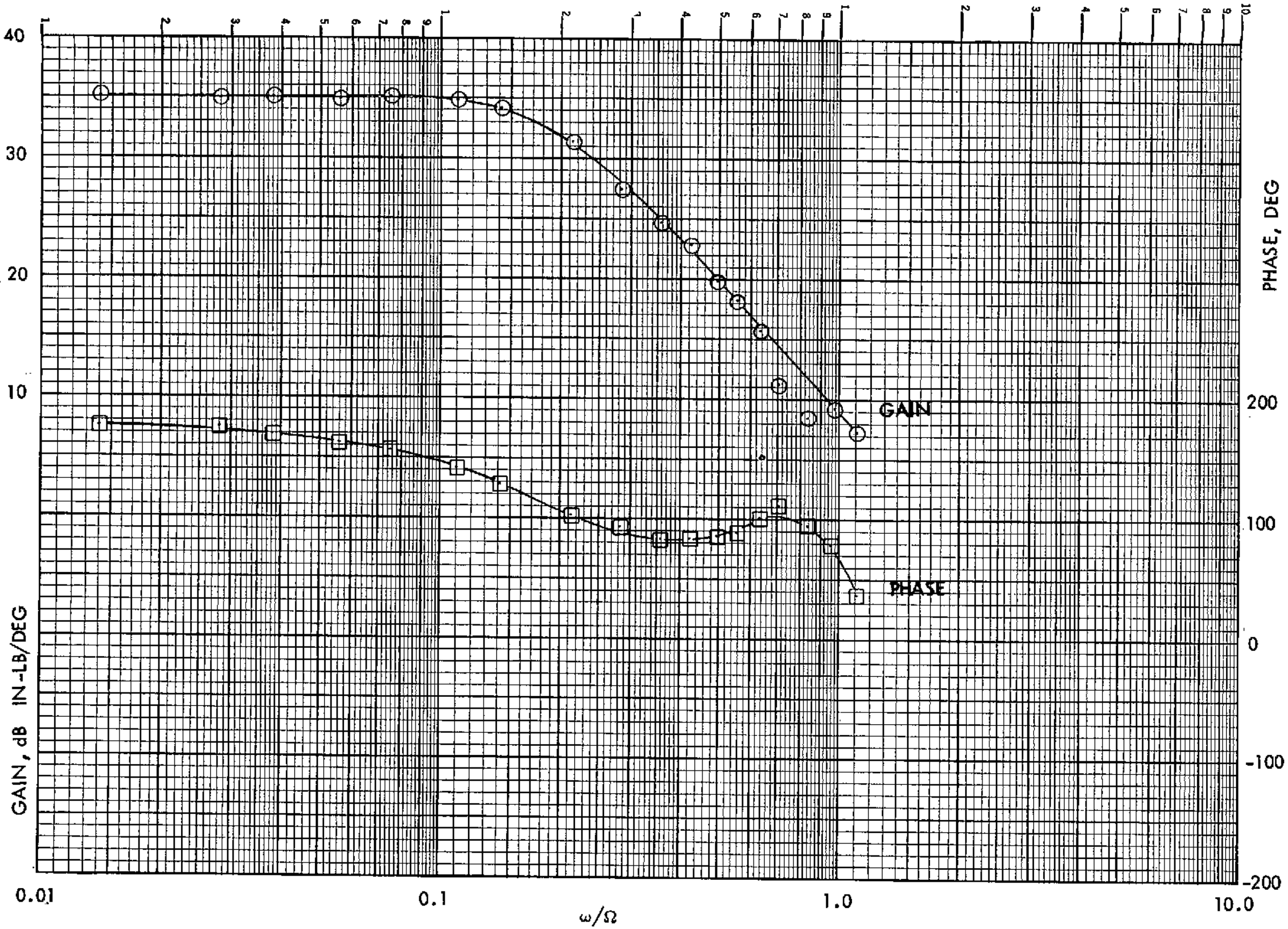

Figure B-26. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.2$, $\theta_o = 12^{\circ}$.

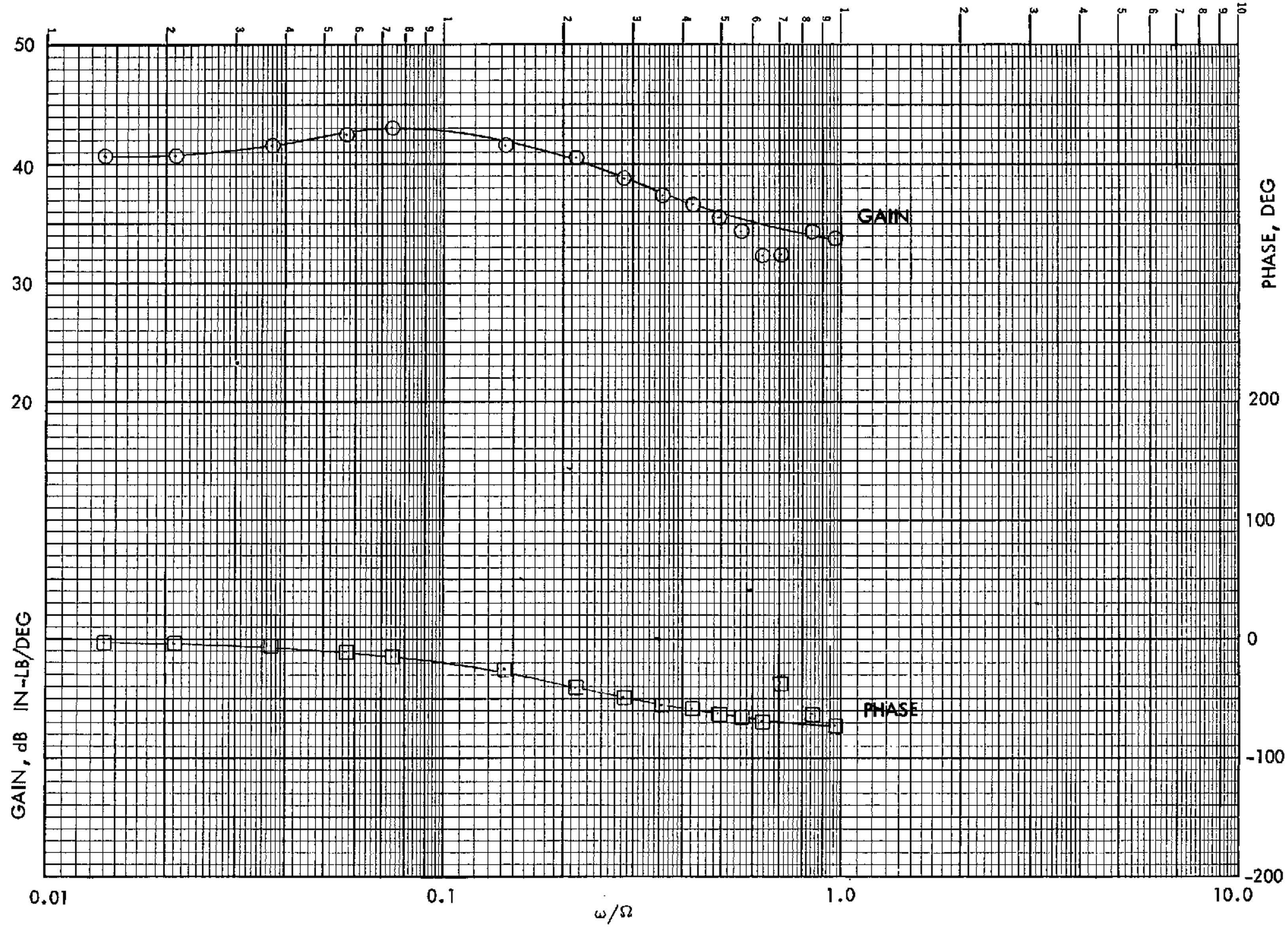

Figure B-27. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.26$, $\theta_o = 1^{\circ}$.

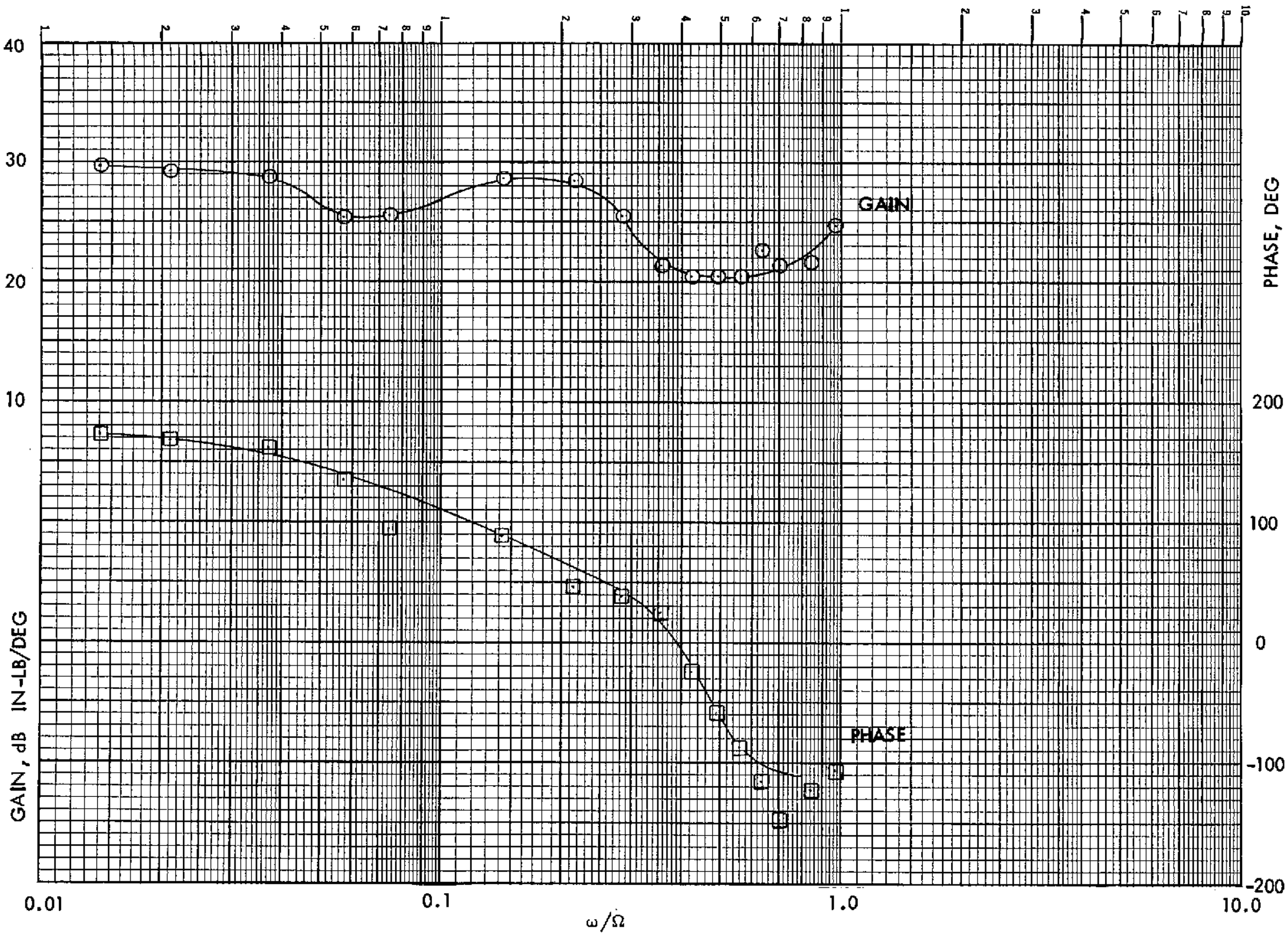

Figure B-28. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.26$, $\theta_o = 1^o$.

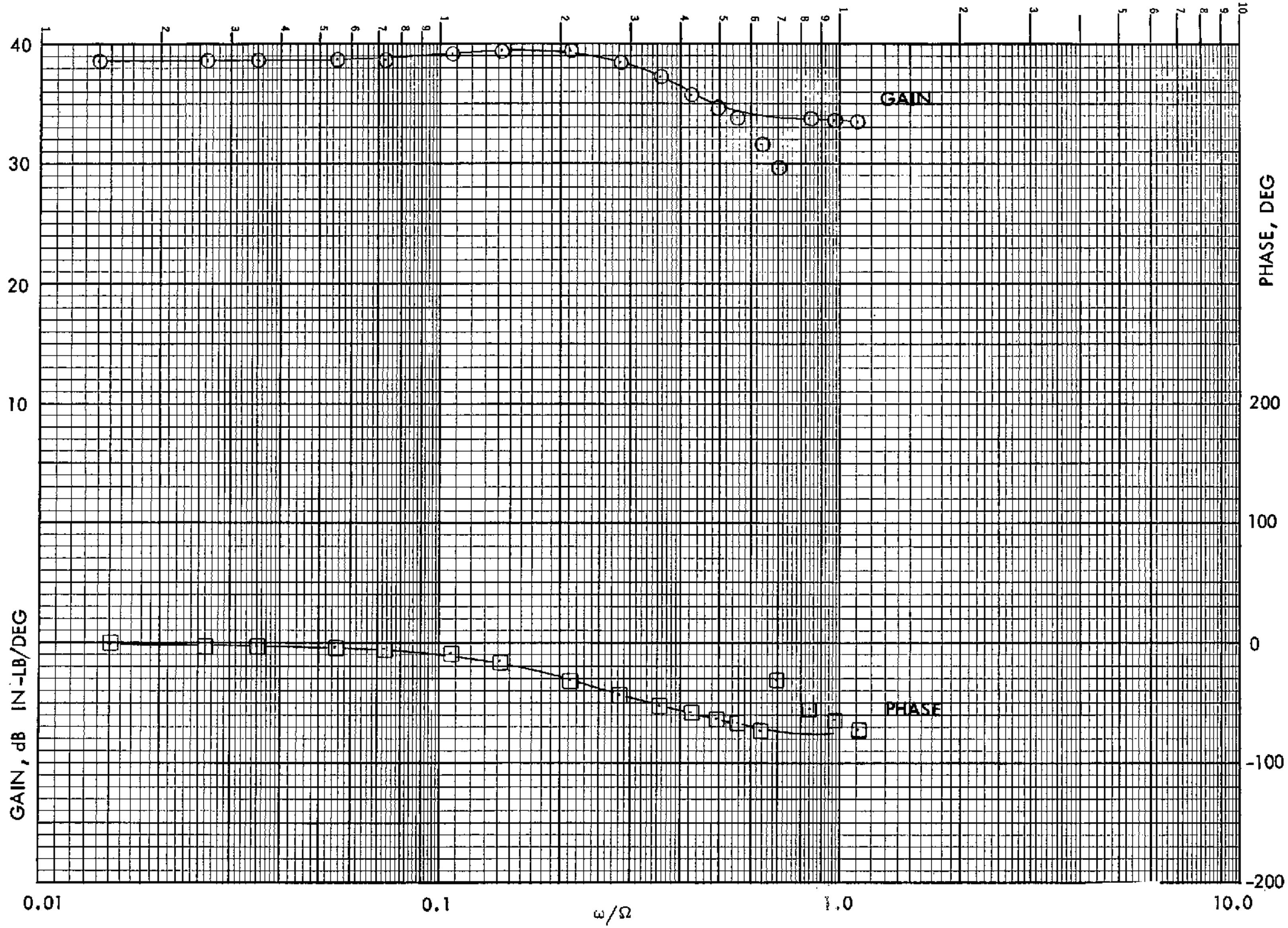

Figure B-29. Configuration 5, Hub Pitch Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.26$, $\theta_o = 12^\circ$.

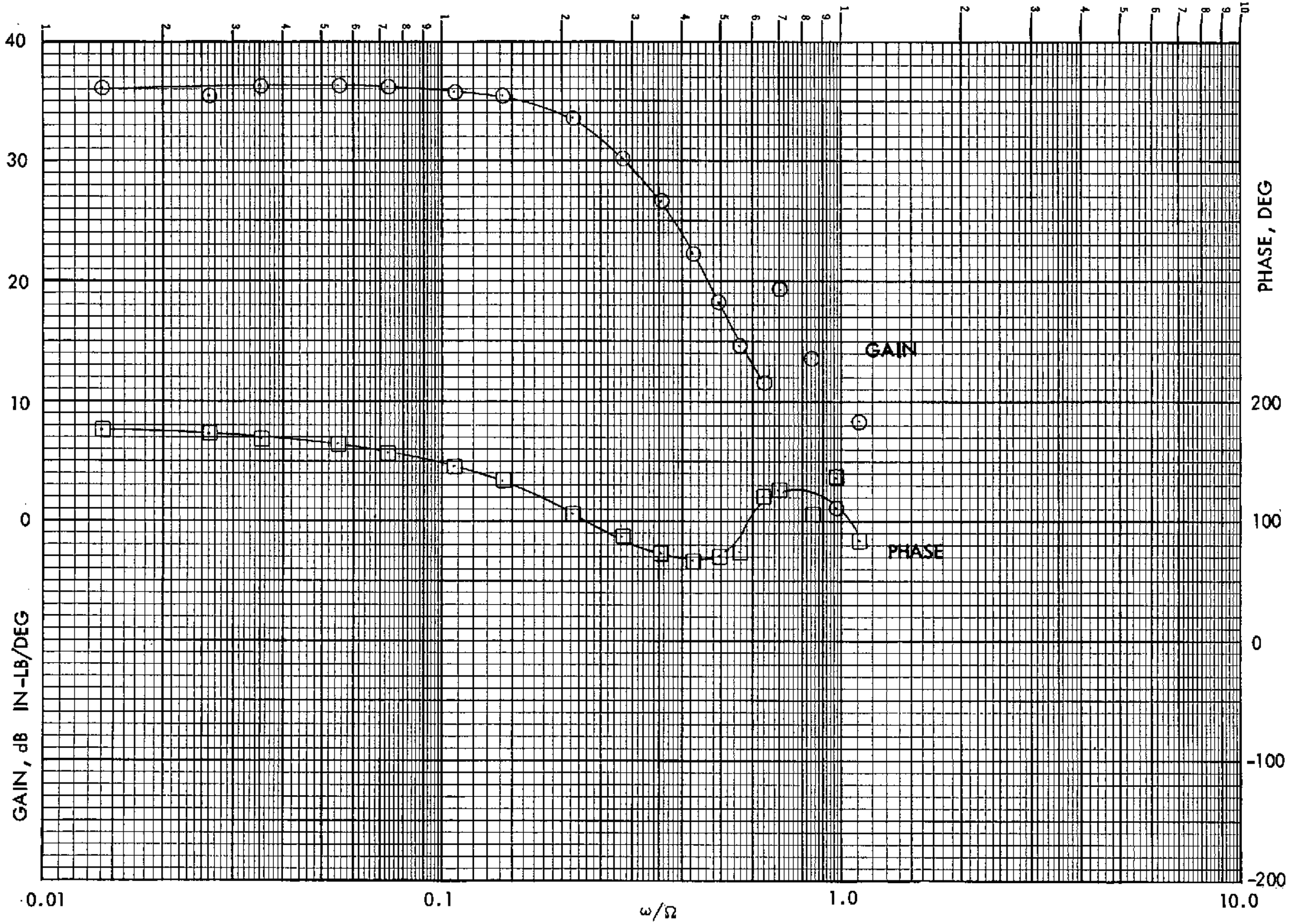

Figure B-30. Configuration 5, Hub Roll Moment Frequency Response to Longitudinal Cyclic Pitch. 850 RPM, $\mu = 0.26$, $\theta_o = 12^o$.

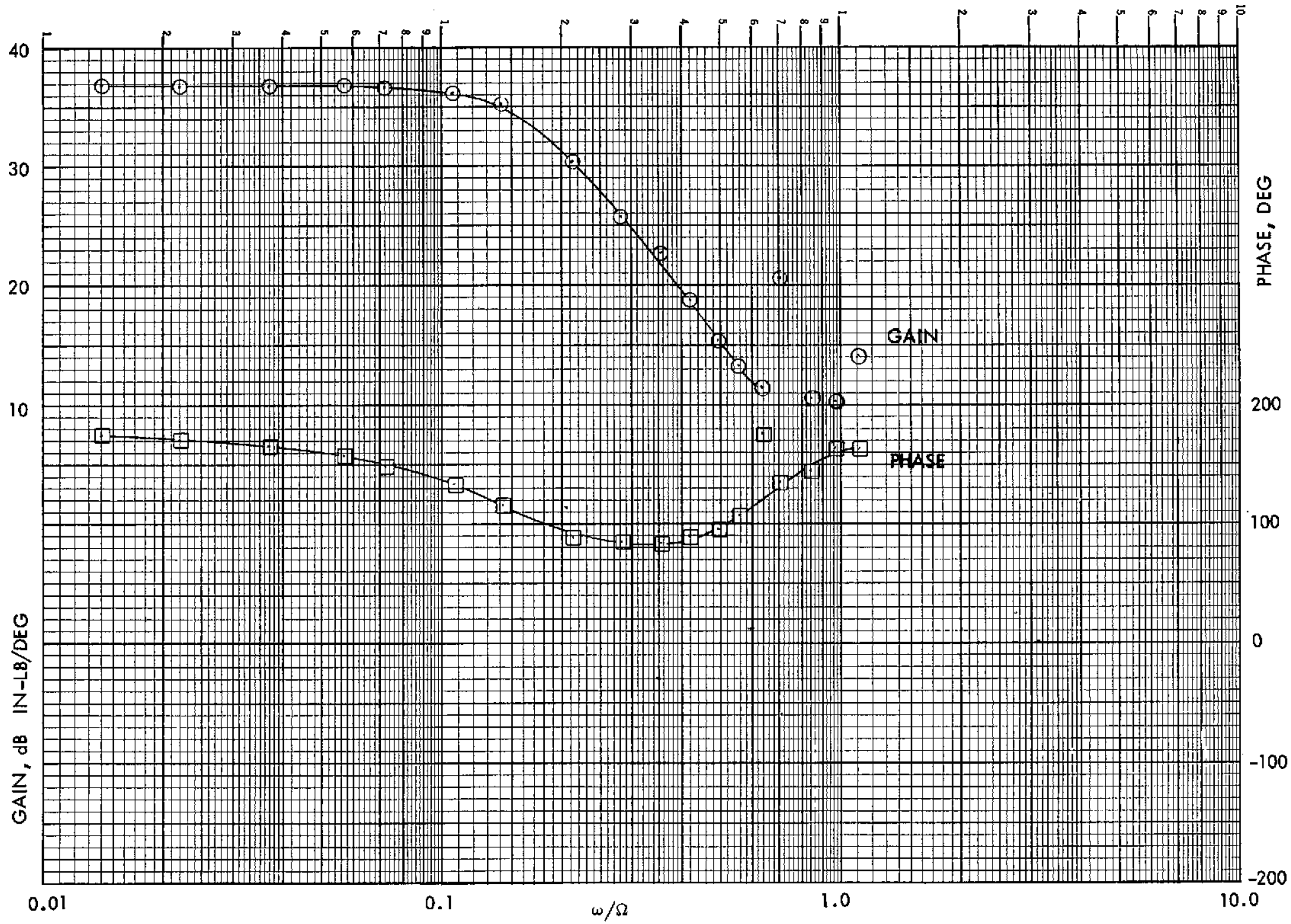

Figure B-31. Configuration 5, Hub Pitch Moment Frequency Response to Lateral Cyclic Pitch. 850 RPM, $\mu = 0.1$, $\theta_o = 1^o$.

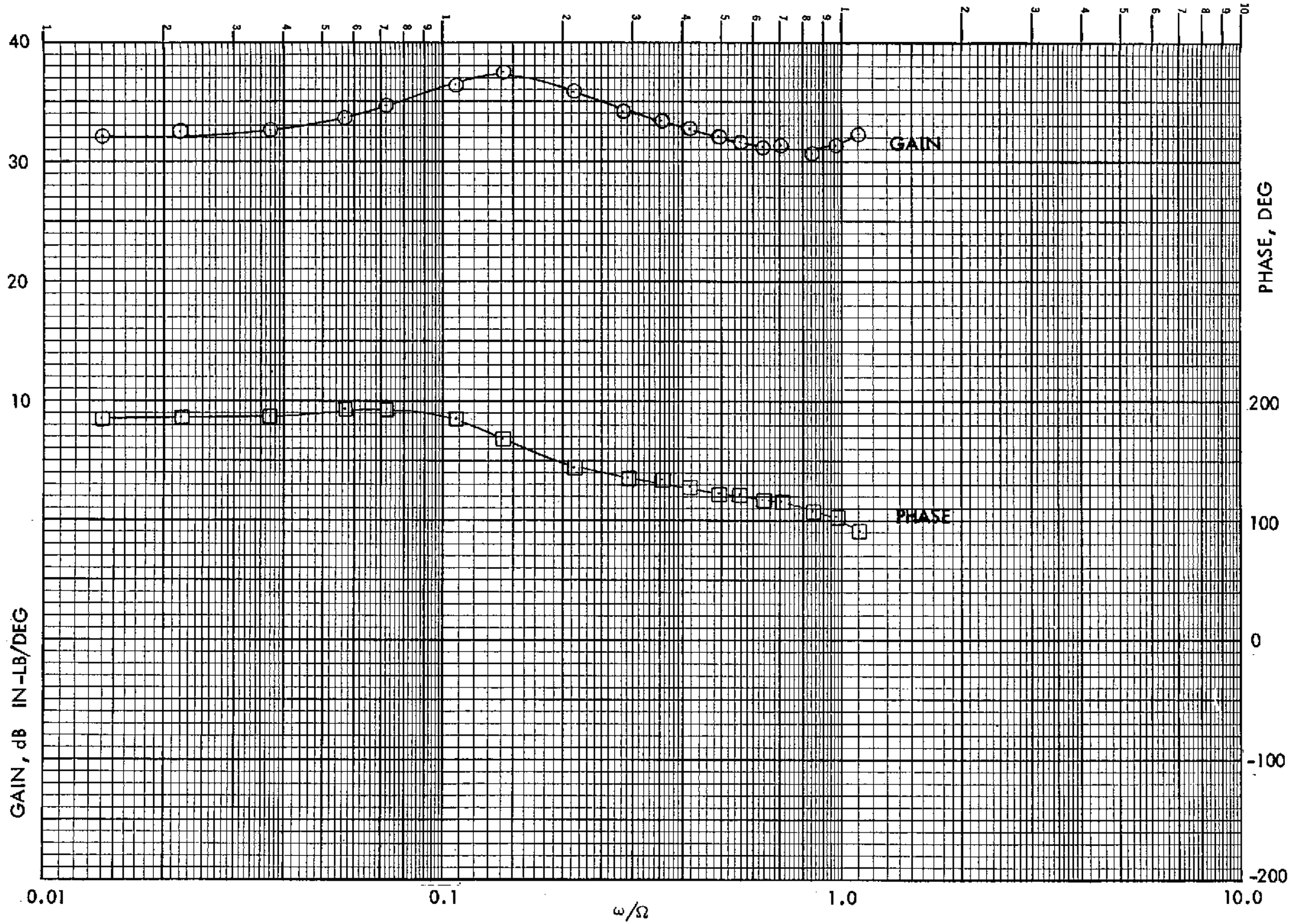

Figure B-32. Configuration 5, Hub Roll Moment Frequency Response to Lateral Cyclic Pitch. 850 RPM, $\mu = 0.1$, $\theta_o = 1^o$.

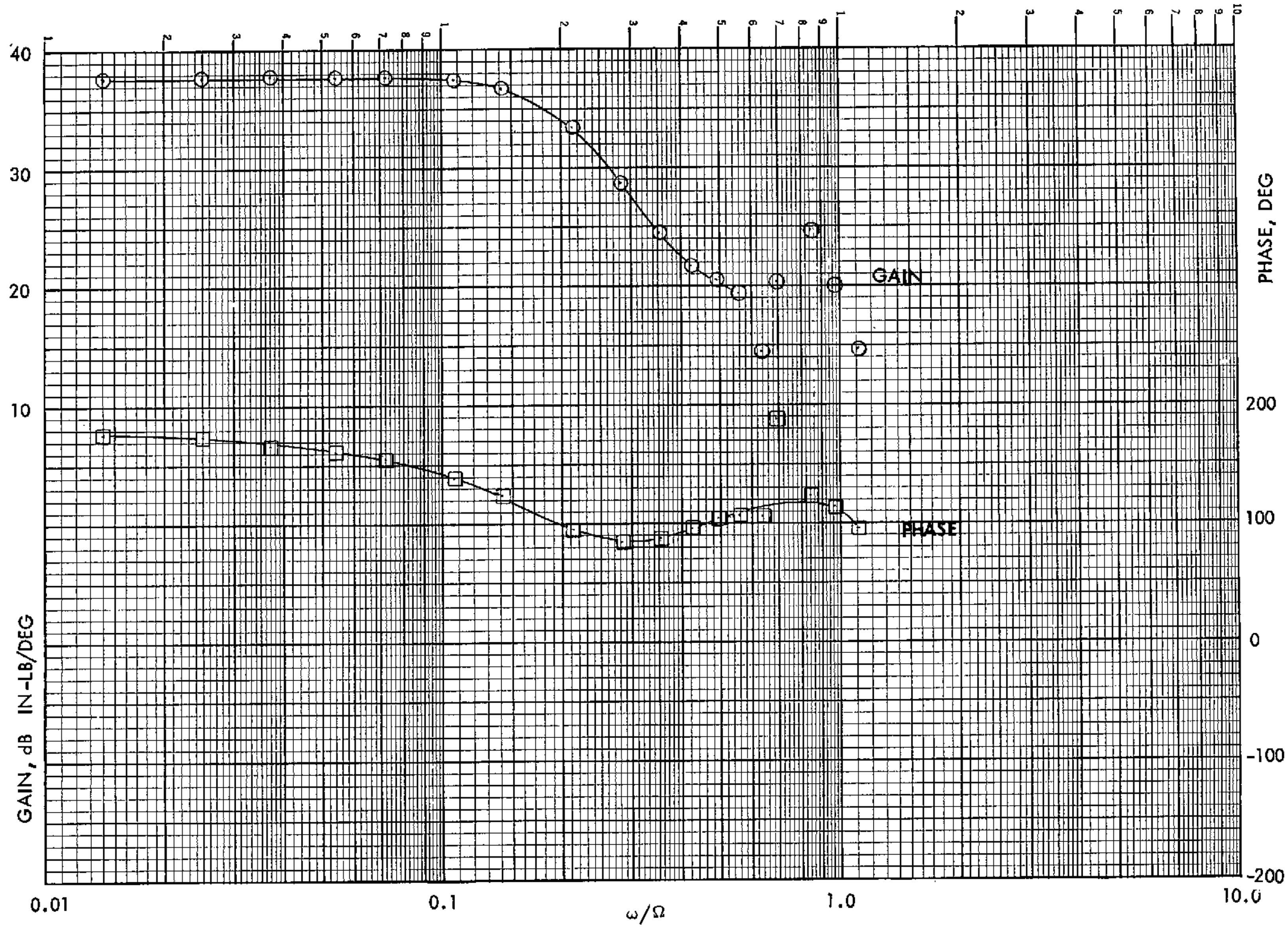

Figure B-33. Configuration 5, Hub Pitch Moment Frequency Response to Lateral Cyclic Pitch. 850 RPM, $\mu = 0.1$, $\theta_o = 12°$.

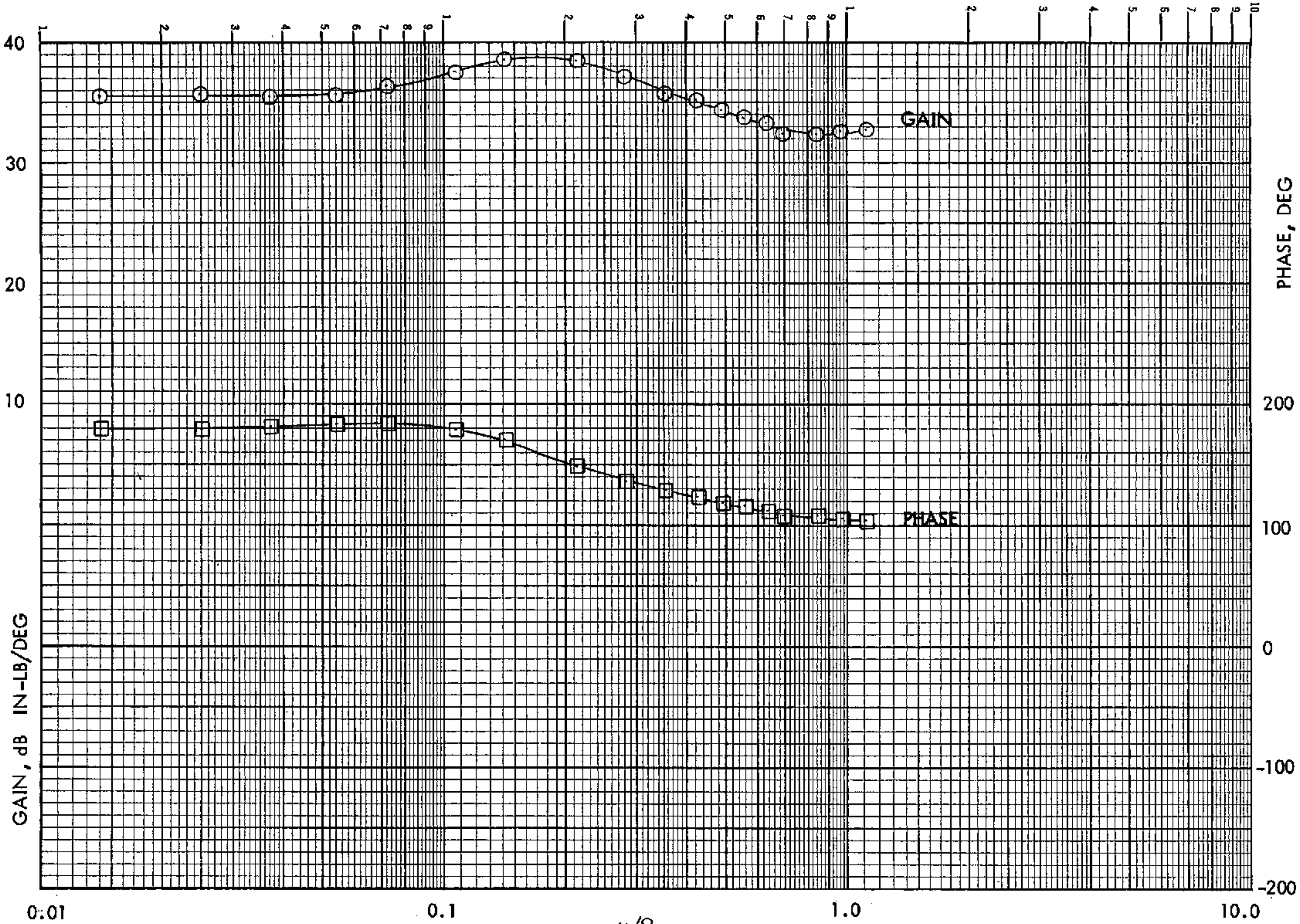

Figure B-34. Configuration 5, Hub Roll Moment Frequency Response to Lateral Cyclic Pitch. 850 RPM, $\mu = 0.1$, $\theta_o = 12°$.

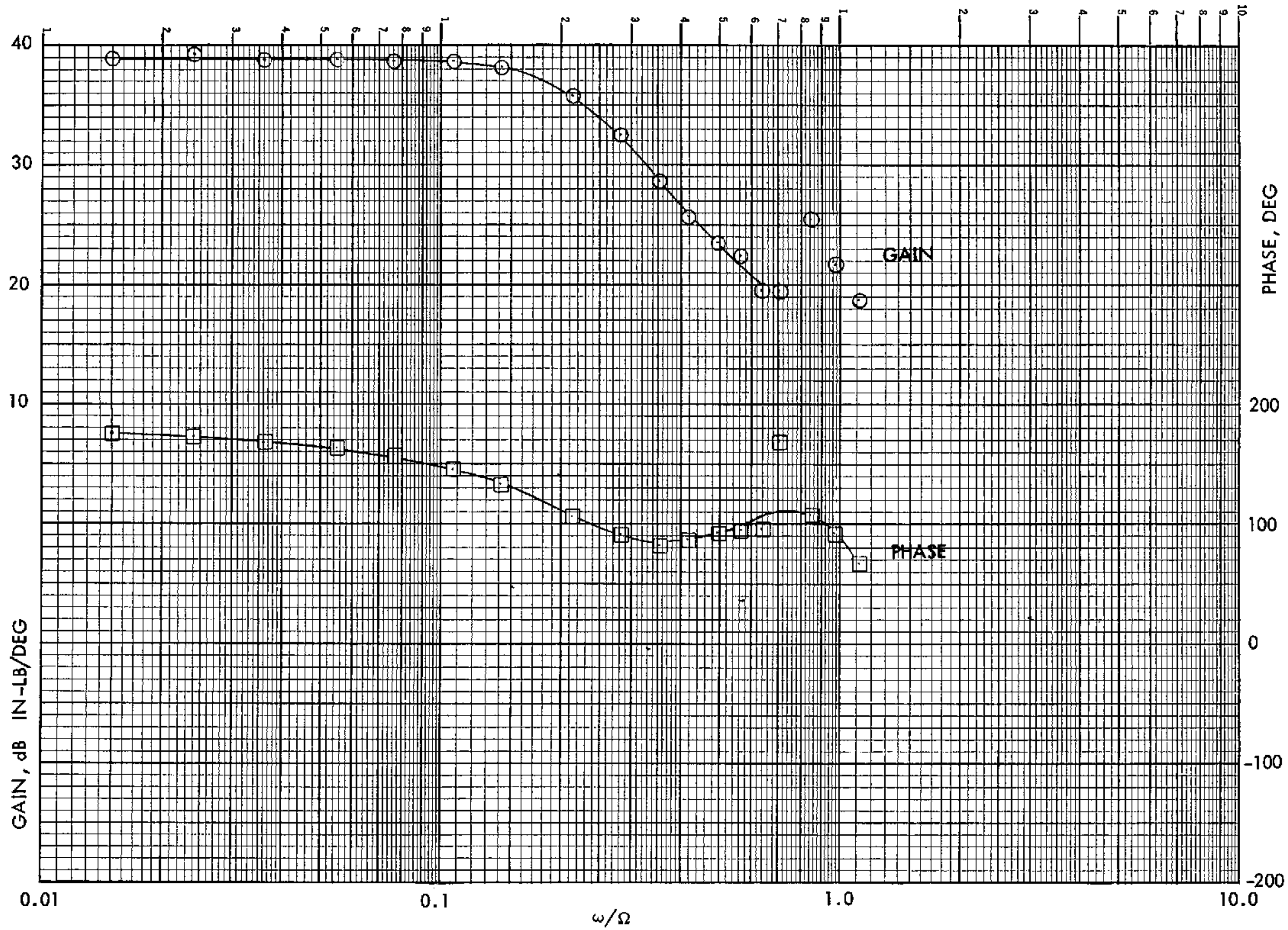

Figure B-35. Configuration 5, Hub Pitch Moment Frequency Response to Lateral Cyclic Pitch. 850 RPM, $\mu = 0.26$, $\theta_o = 12^o$.

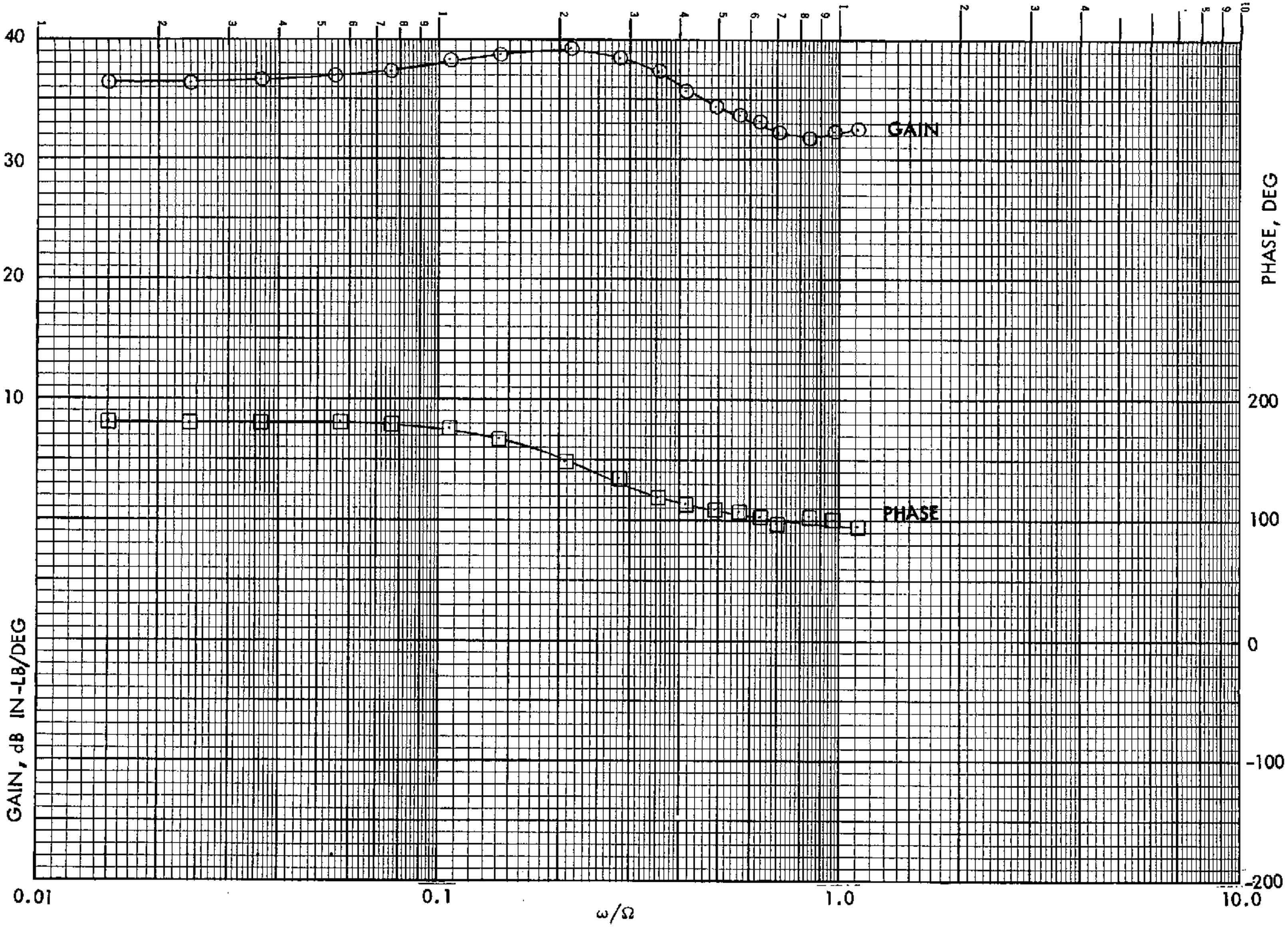

Figure B-36. Configuration 5, Hub Roll Moment Frequency Response to Lateral Cyclic Pitch. 850 RPM, $\mu = 0.26$, $\theta_o = 12°$.

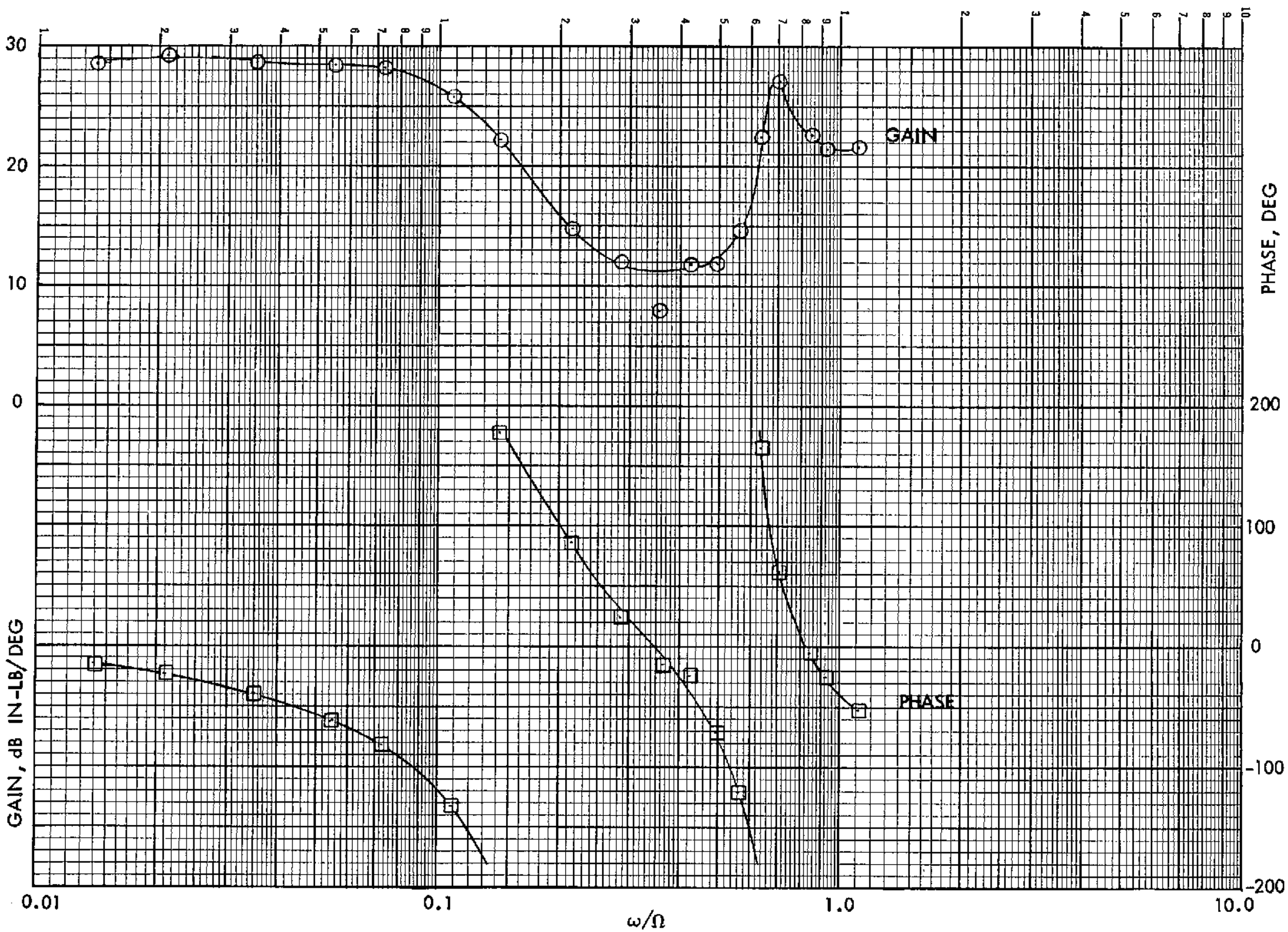

Figure B-37. Configuration 5, Hub Pitch Moment Frequency Response to Collective Pitch. 850 RPM, $\mu = 0.05$, Nominal $\theta_o = 2^\circ$.

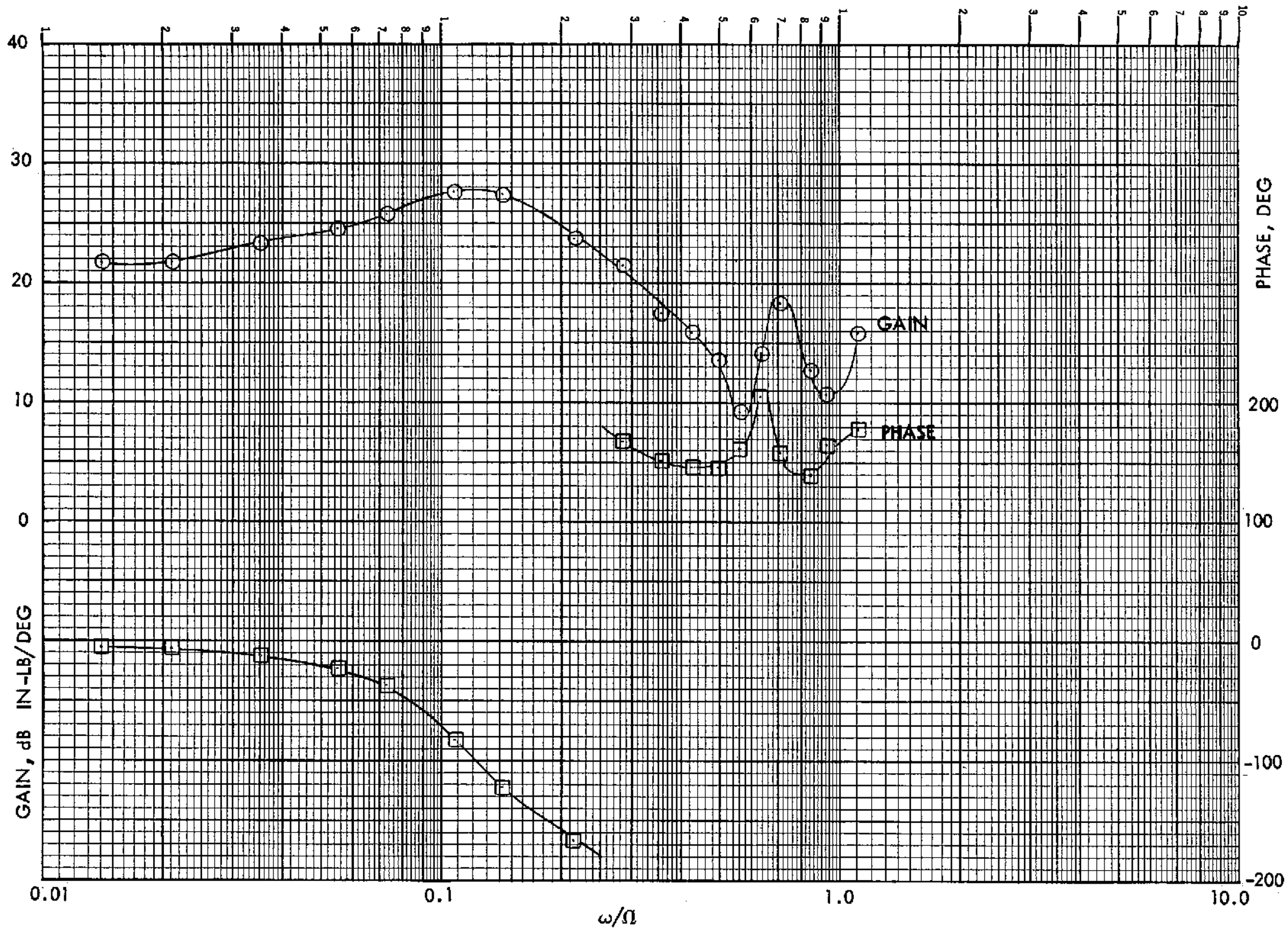

Figure B-38. Configuration 5, Hub Roll Moment Frequency Response to Collective Pitch. 850 RPM, $\mu = 0.05$, Nominal $\theta_o = 2^\circ$.

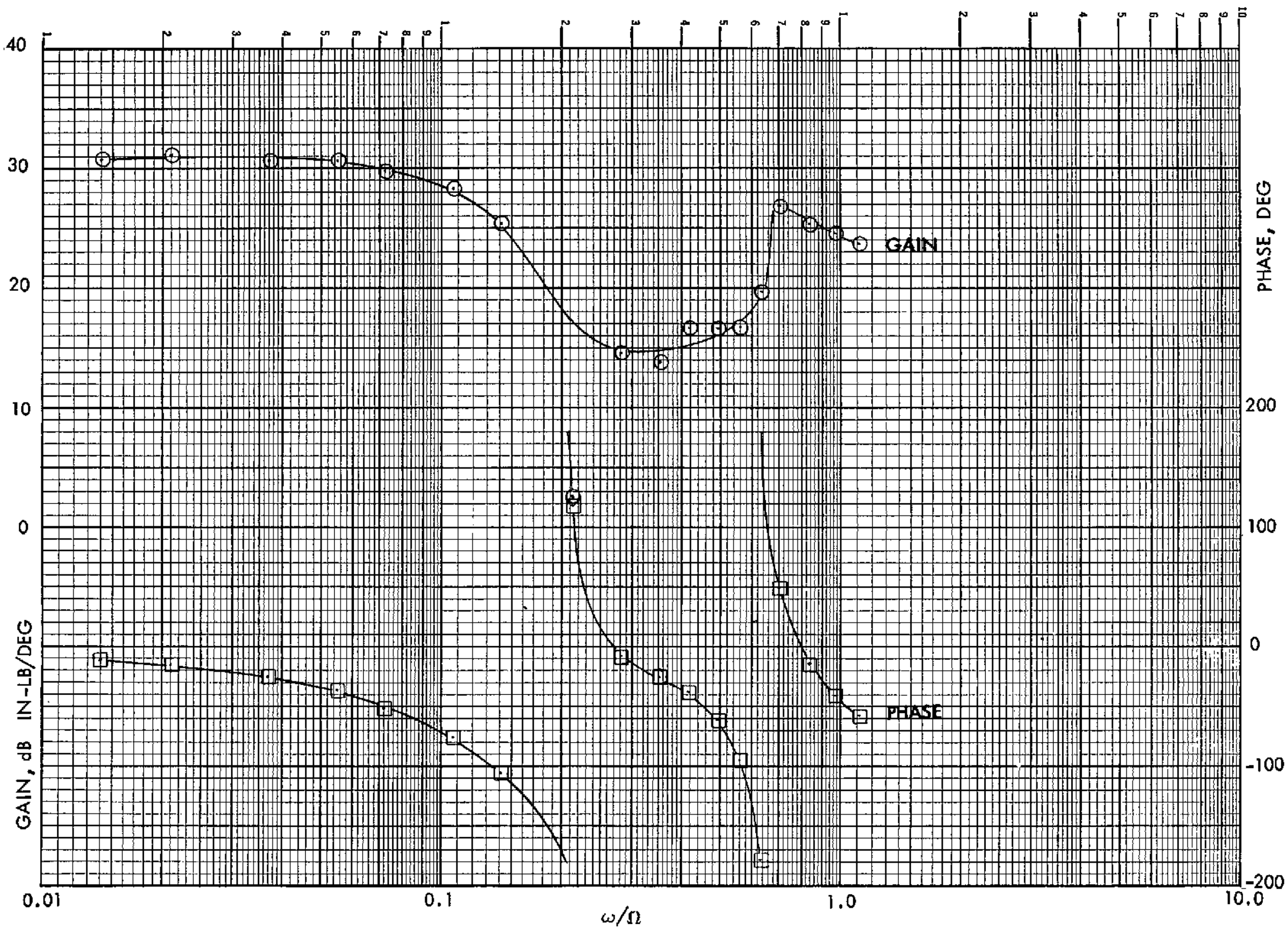

Figure B-39. Configuration 5, Hub Pitch Moment Frequency Response to Collective Pitch. 850 RPM, $\mu = 0.1$, Nominal $\theta_o = 2^\circ$.

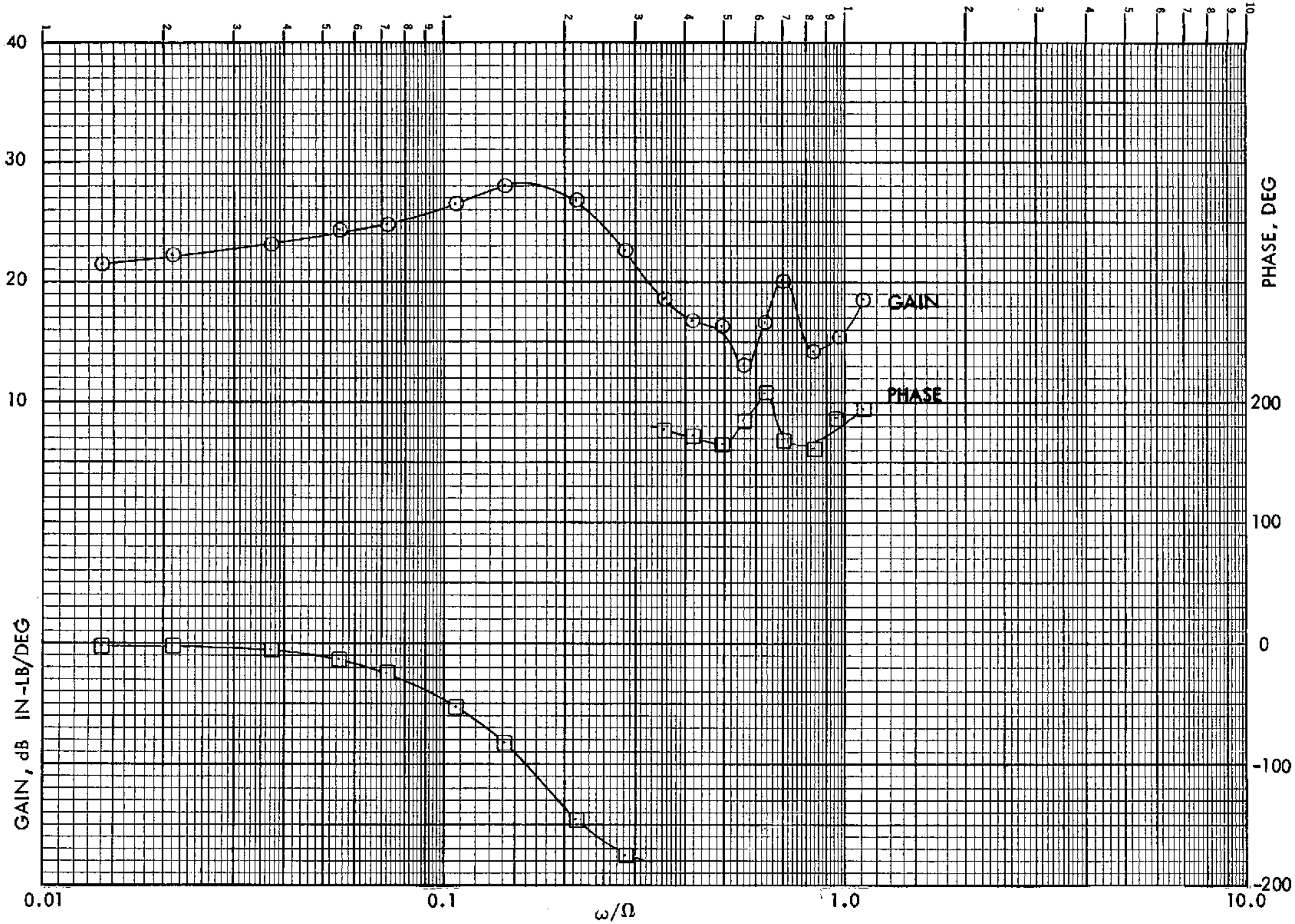

Figure B-40. Configuration 5, Hub Roll Moment Frequency Response to Collective Pitch. 850 RPM, $\mu = 0.1$, Nominal $\theta_o = 2^\circ$.

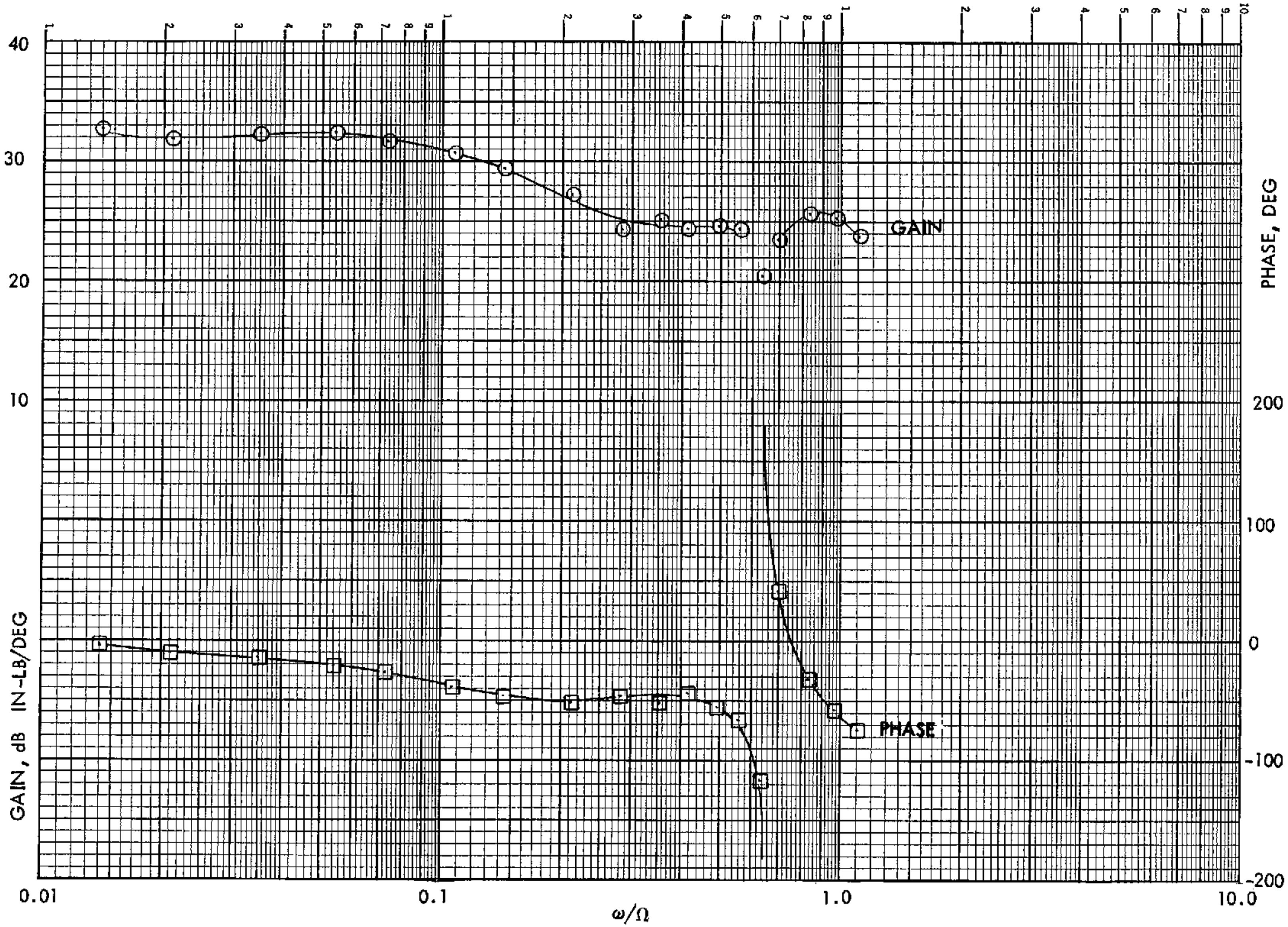

Figure B-41. Configuration 5, Hub Pitch Moment Frequency Response to Collective Pitch. 850 RPM, $\mu = 0.1$, Nominal $\theta_o = 12^\circ$.

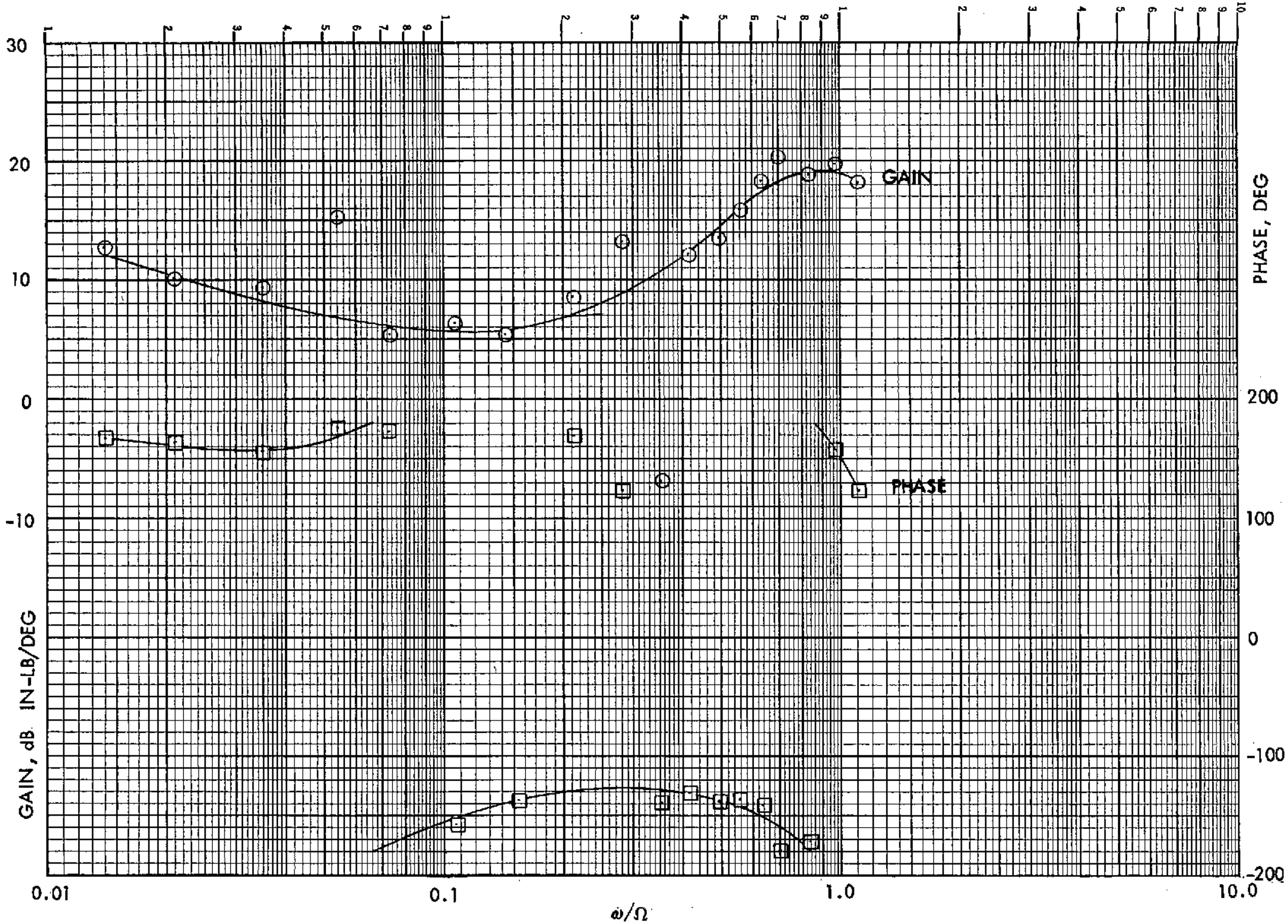

Figure B-42. Configuration 5, Hub Roll Moment Frequency Response to Collective Pitch. 850 RPM, $\mu = 0.1$, Nominal $\theta_o = 12^{\circ}$.

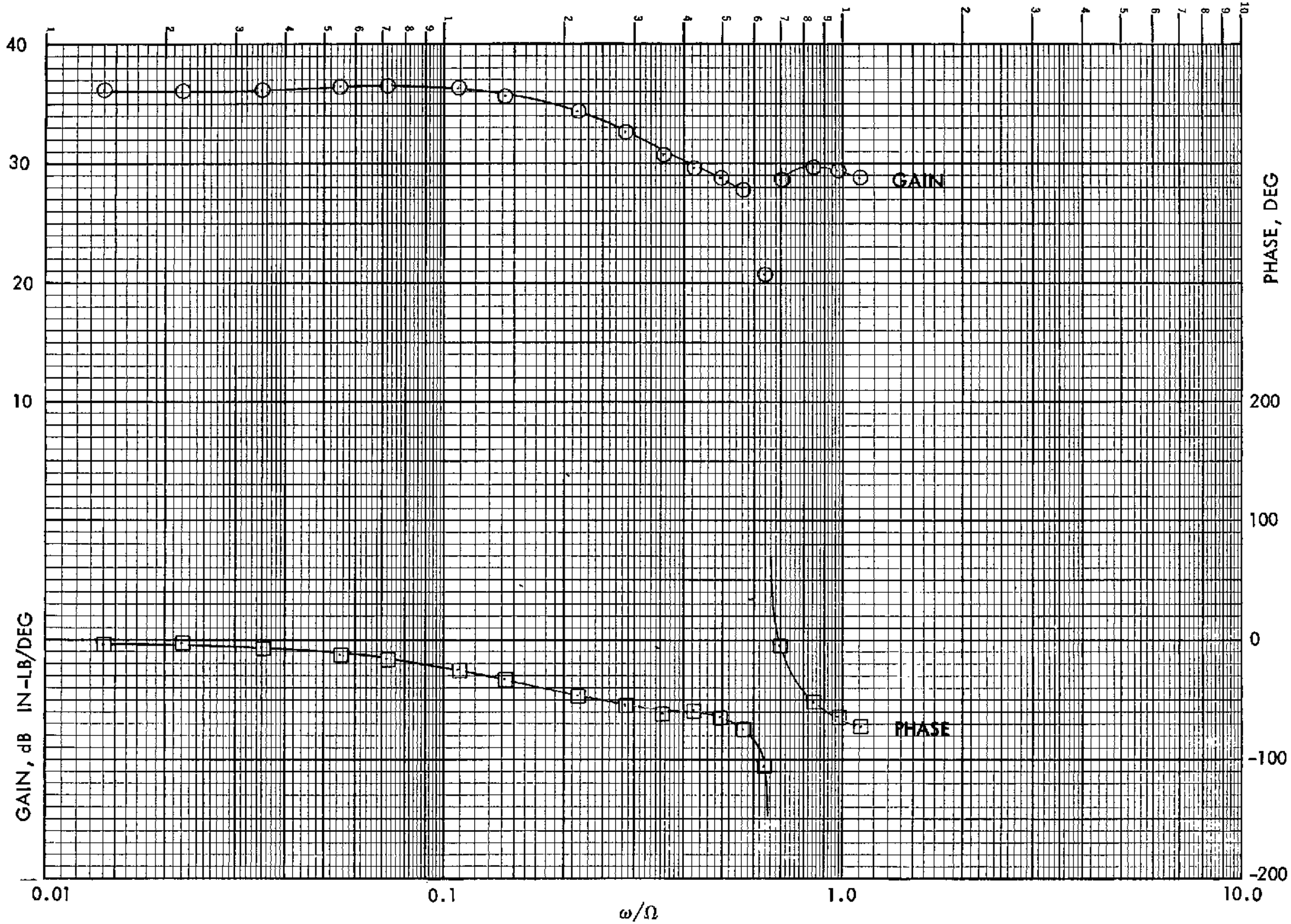

Figure B-43. Configuration 5, Hub Pitch Moment Frequency Response to Collective Pitch. 850 RPM, $\mu = 0.26$, Nominal $\theta_o = 1^\circ$.

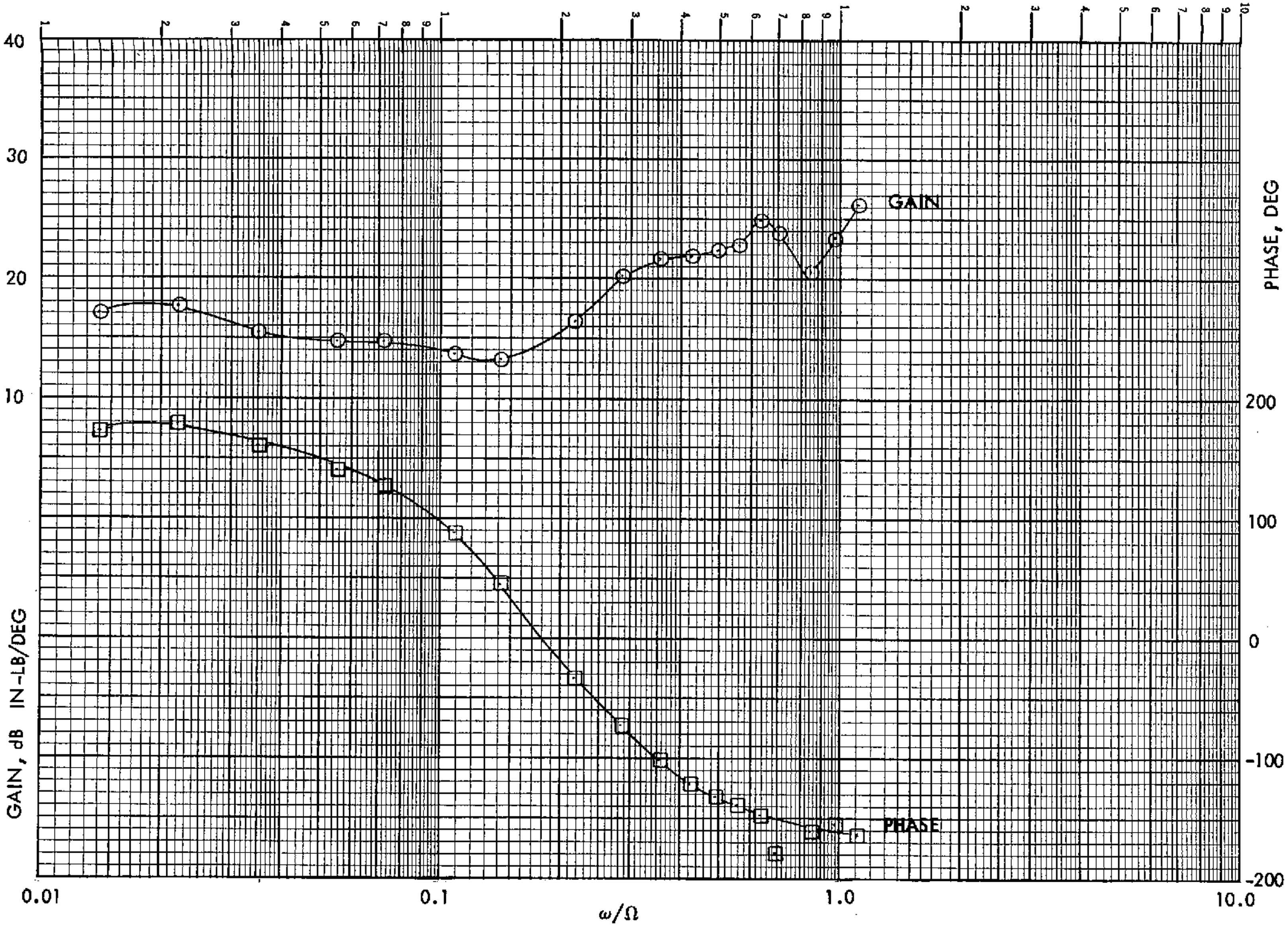

Figure B-44. Configuration 5, Hub Roll Moment Frequency Response to Collective Pitch. 850 RPM, μ = 0.26, Nominal $\theta_o = 1^o$.

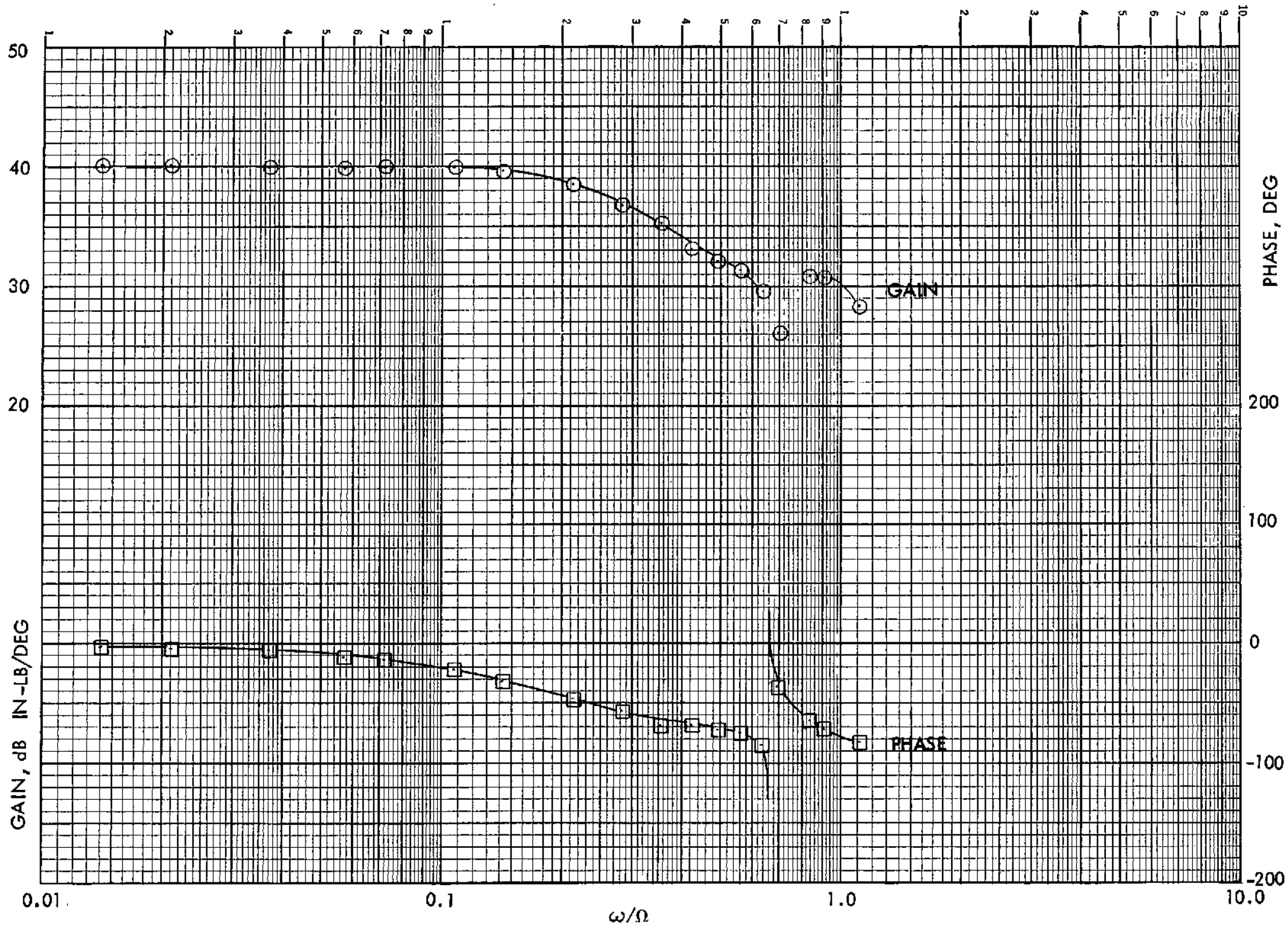

Figure B-45. Configuration 5, Hub Pitch Moment Frequency Response to Collective Pitch. 850 RPM, $\mu = 0.26$, Nominal $\theta_o = 12^\circ$.

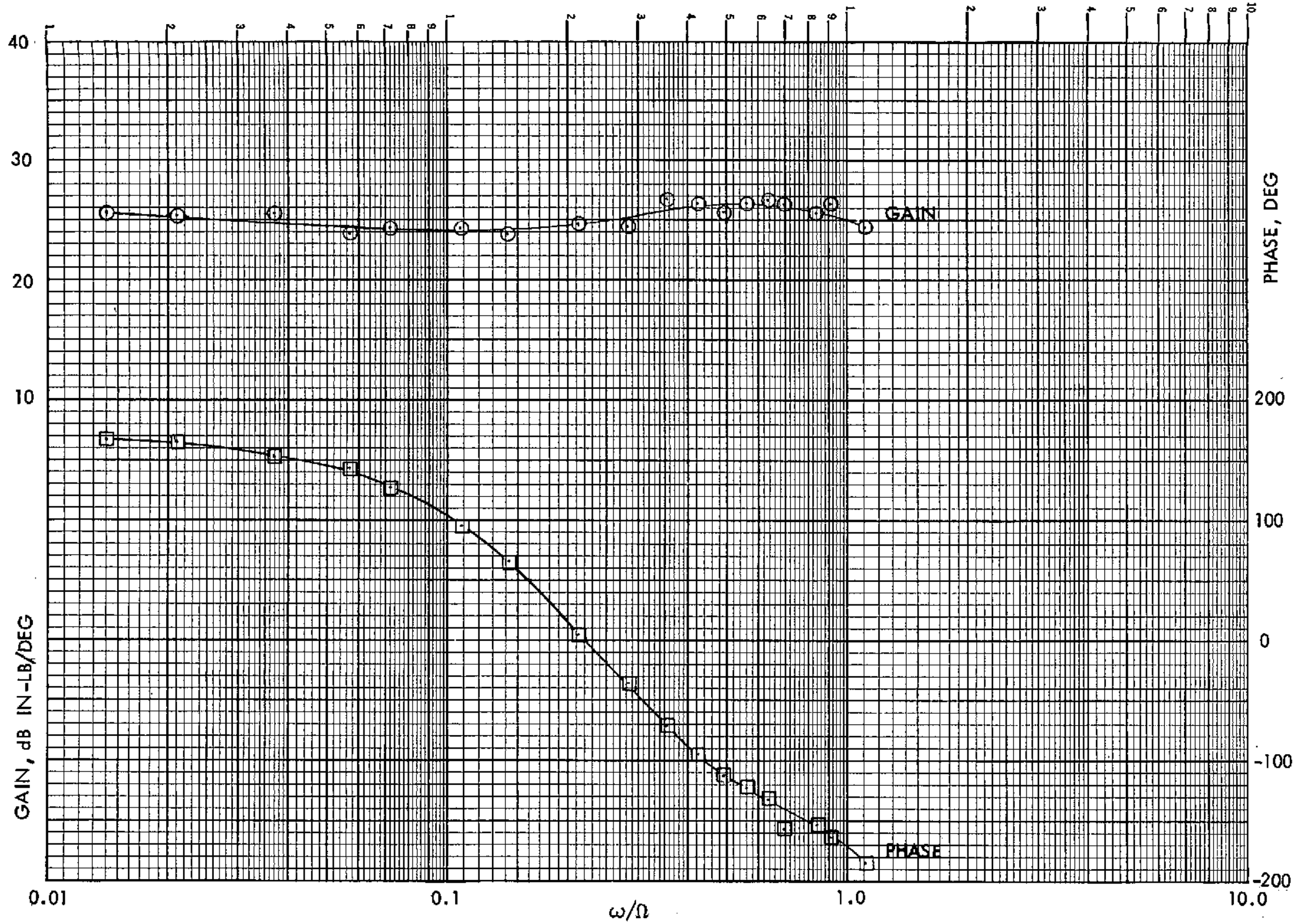

Figure B-46. Configuration 5, Hub Roll Moment Frequency Response to Collective Pitch. 850 RPM, $\mu = 0.26$, Nominal $\theta_o = 12^o$.

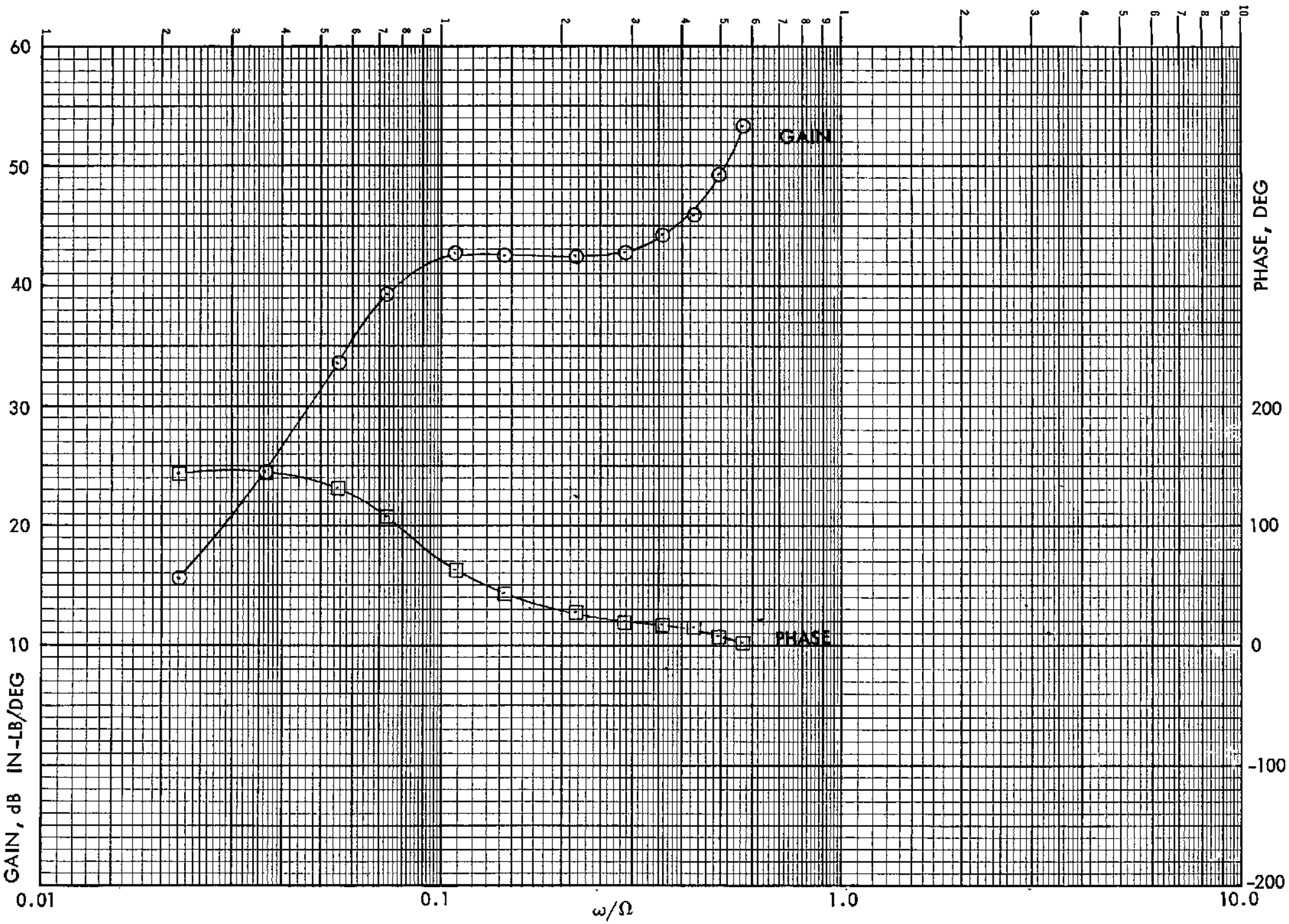

Figure B-47. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0$, $\theta_o = 0^o$.

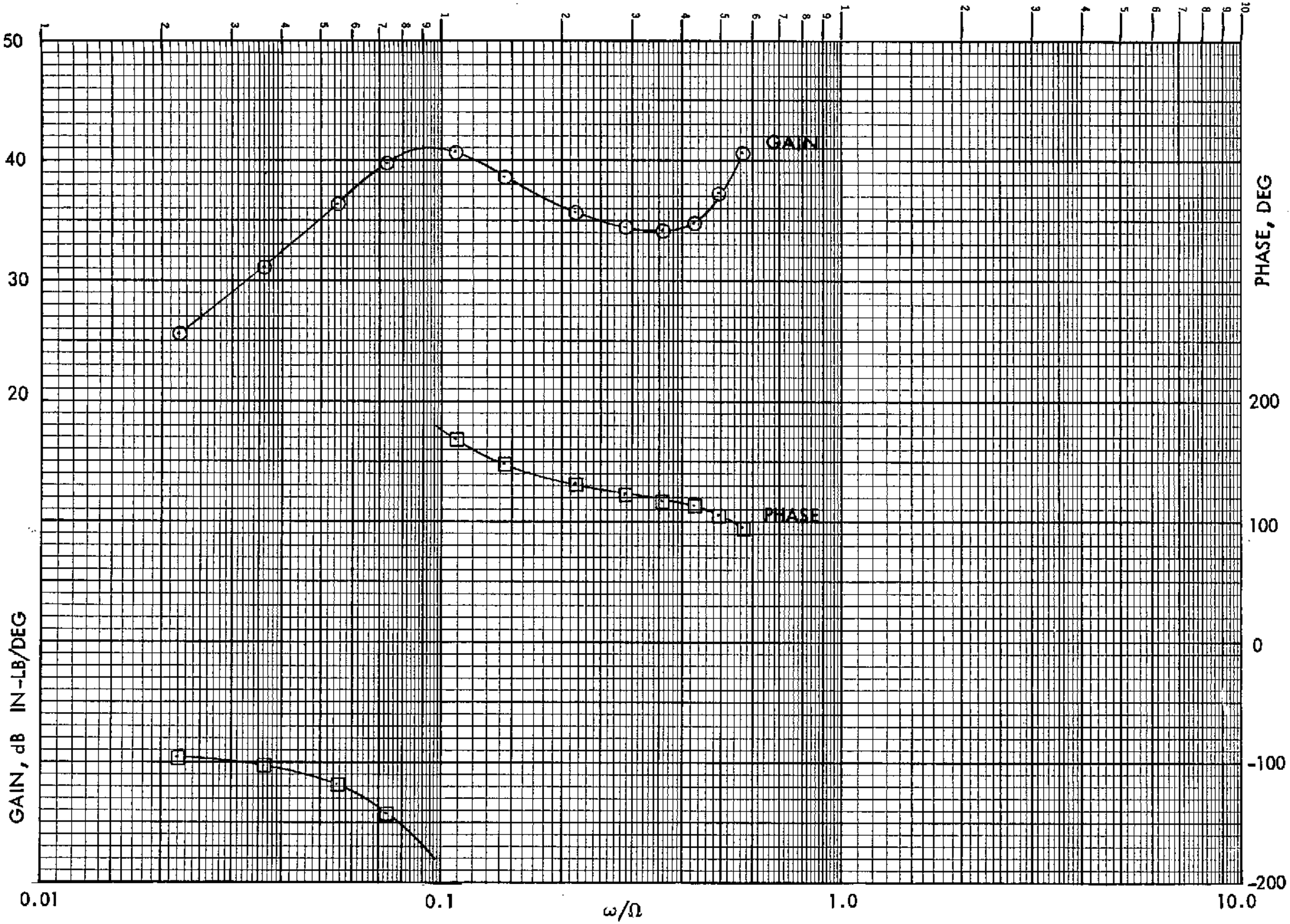

Figure B-48. Configuration 5, Hub Roll Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0$, $\theta_o = 0^o$.

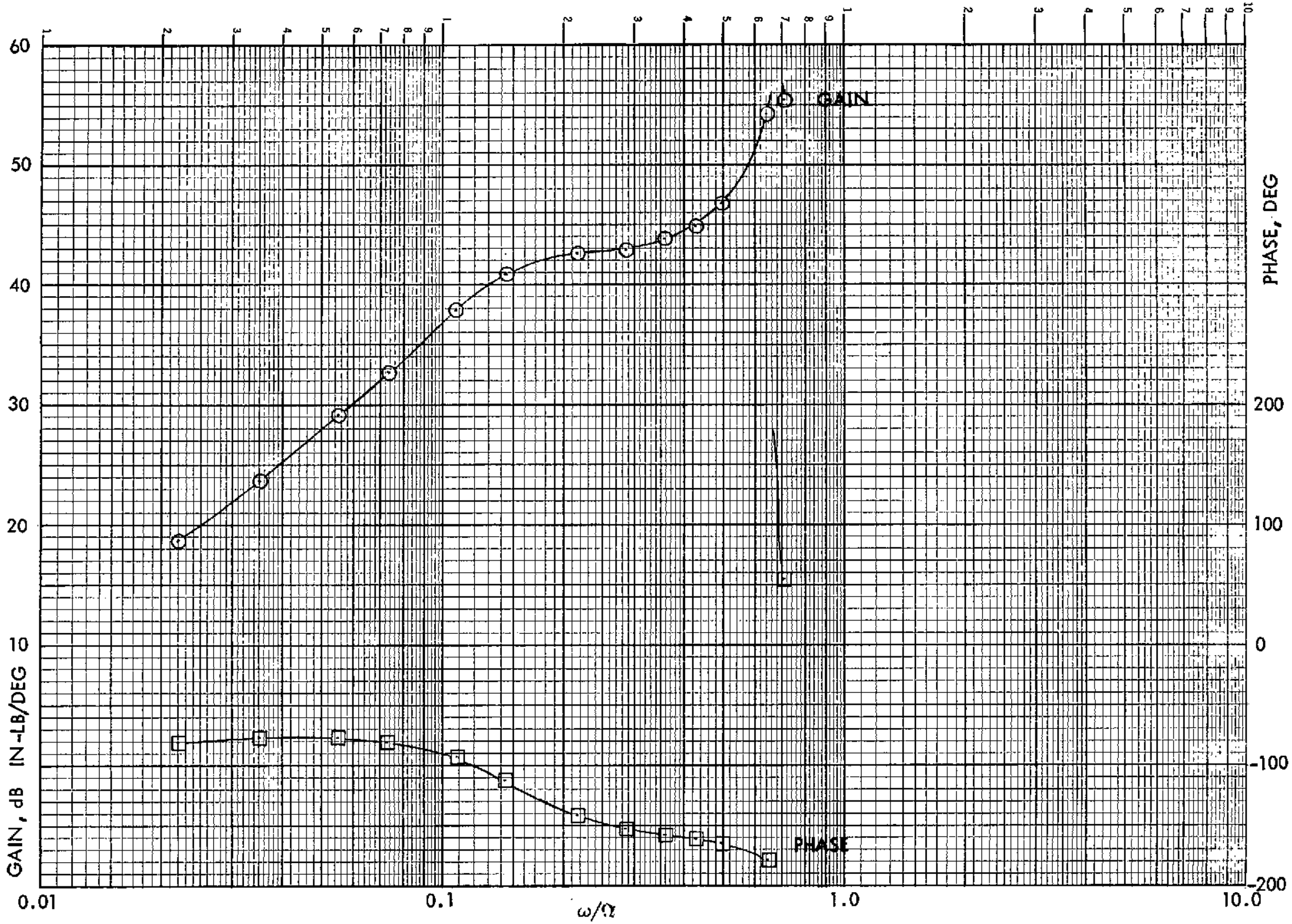

Figure B-49. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0$, $\theta_o = 4^\circ$.

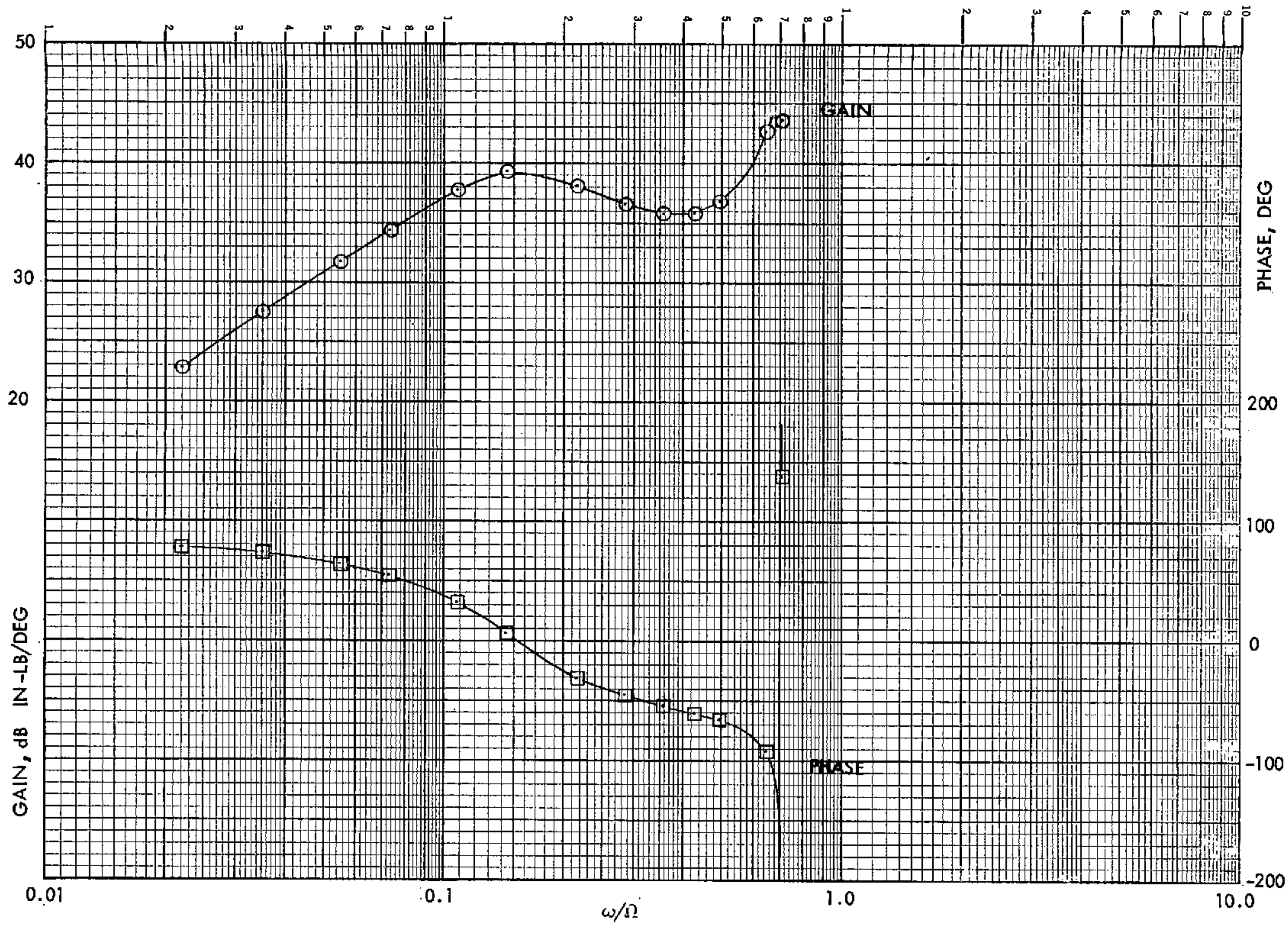

Figure B-50. Configuration 5, Hub Roll Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0$, $\theta_o = 4°$.

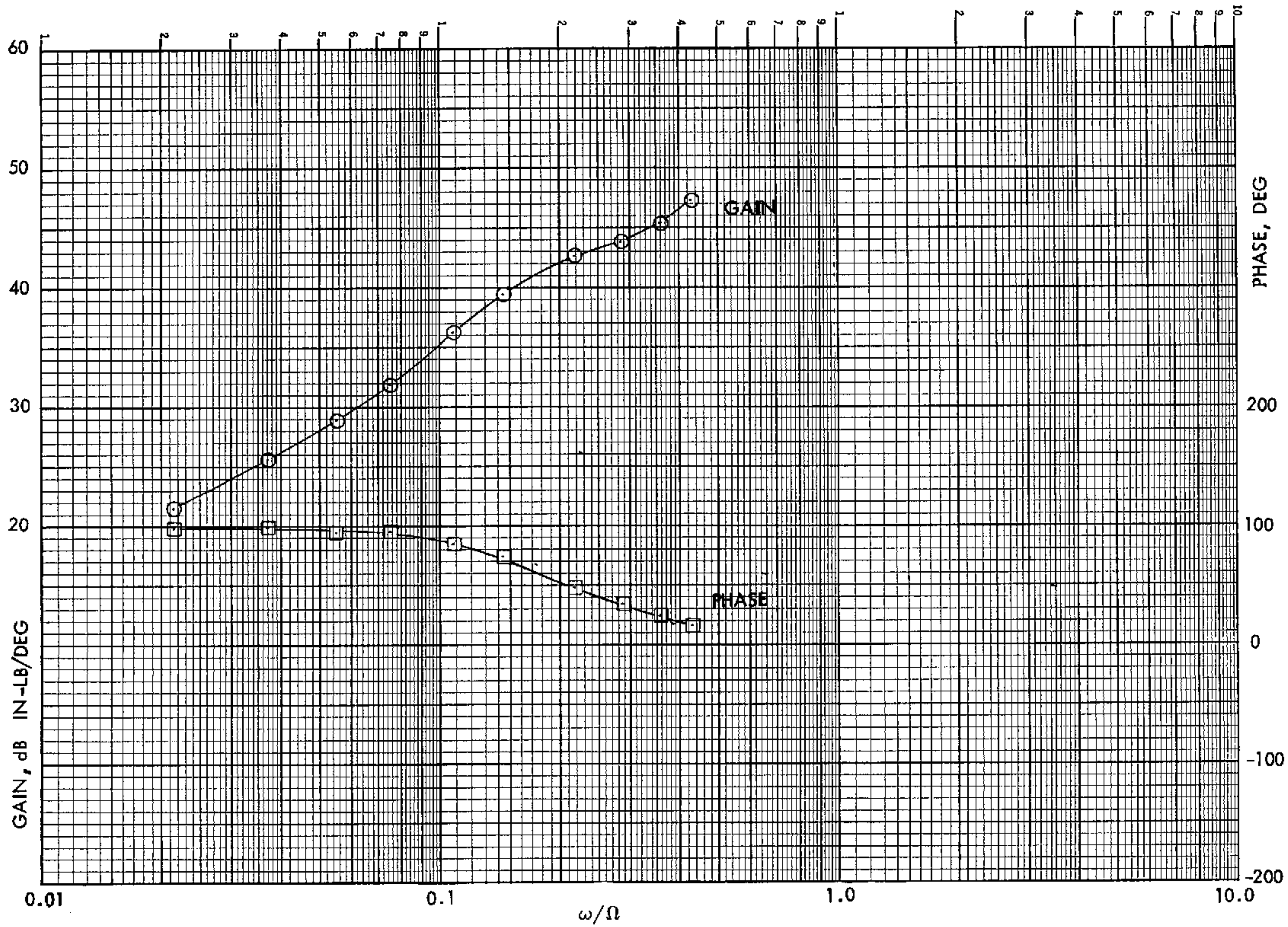

Figure B-51. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0$, $\theta_o = 8^o$.

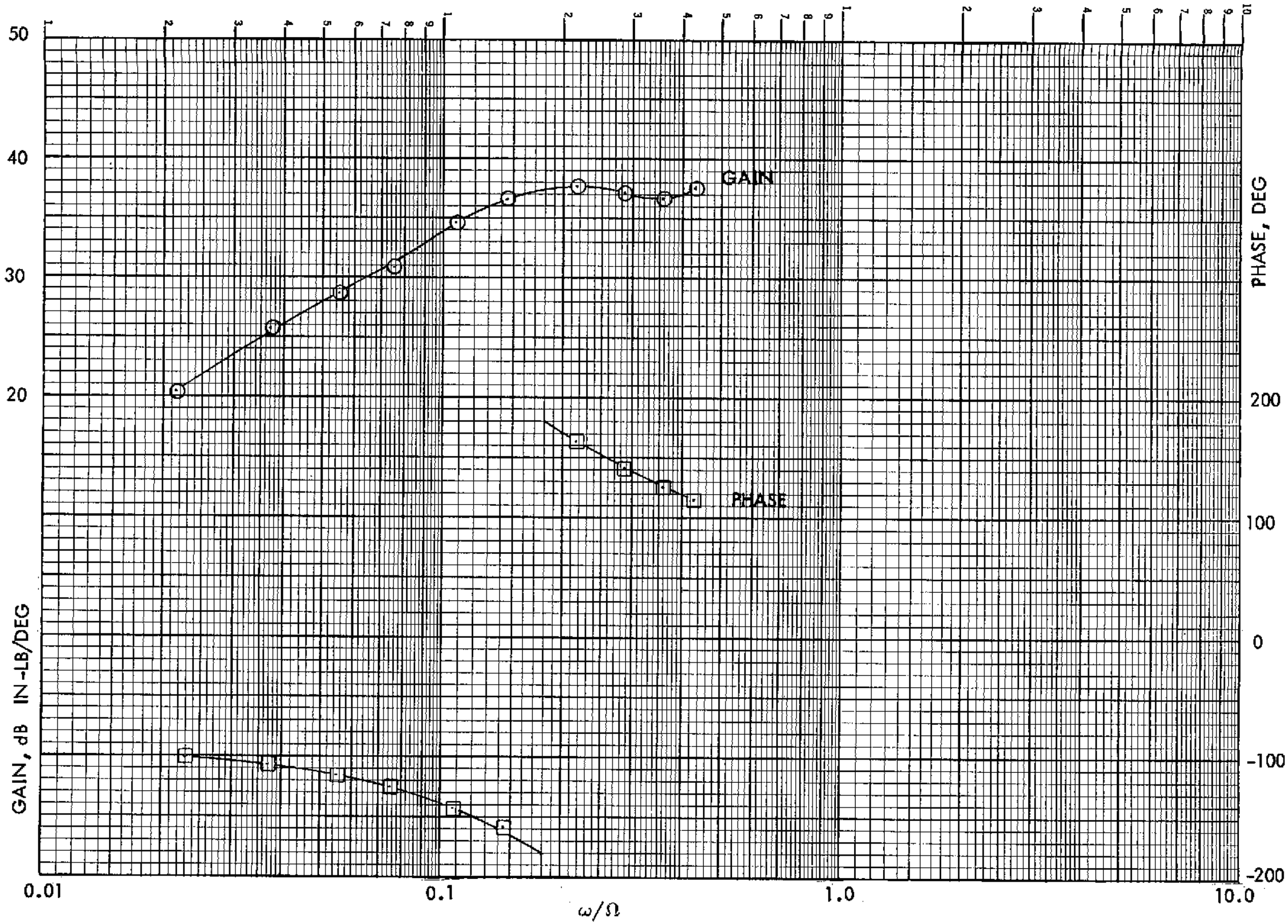

Figure B-52. Configuration 5, Hub Roll Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0$, $\theta_o = 8^o$.

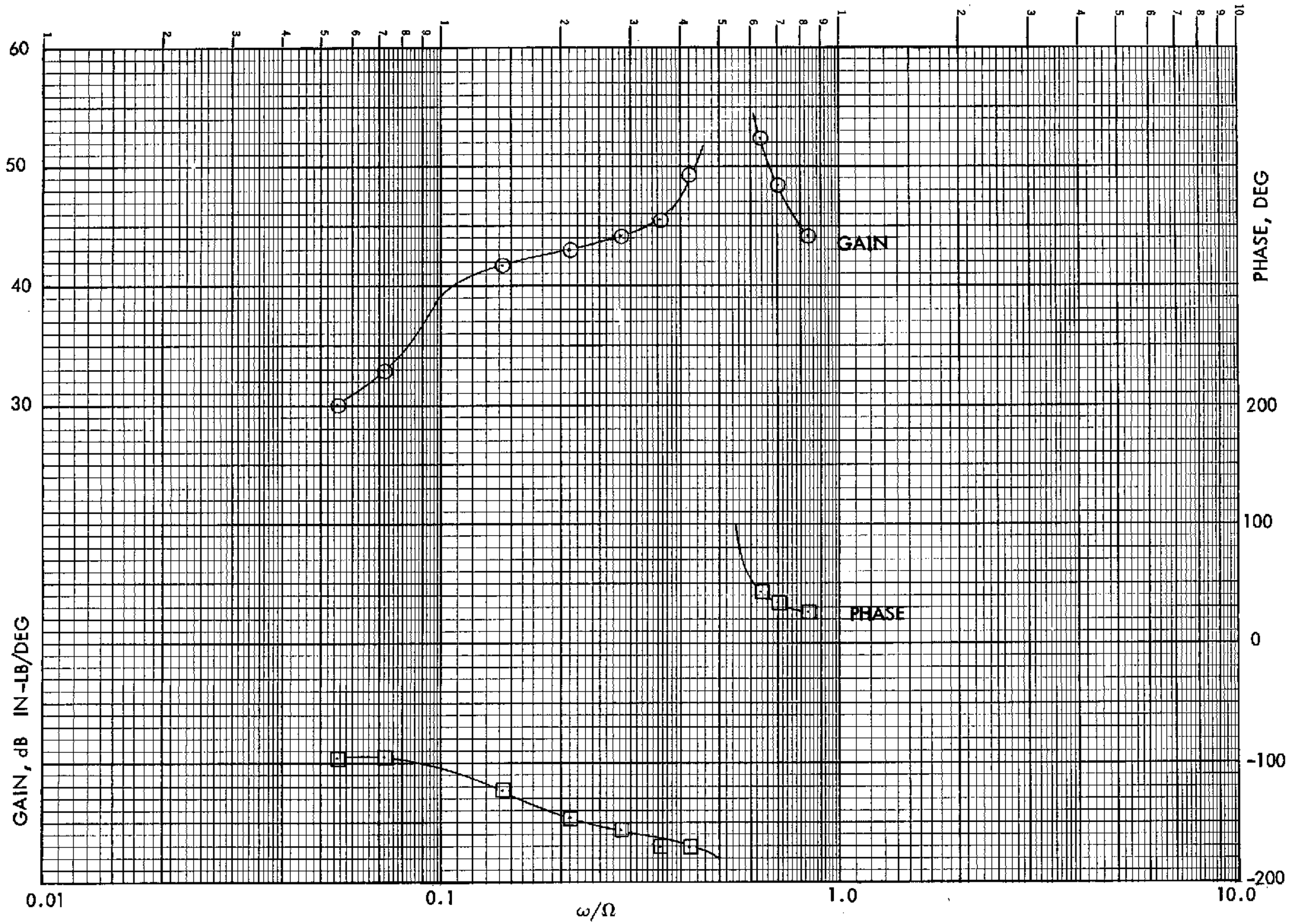

Figure B-53. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0.05$, $\theta_o = 12^\circ$.

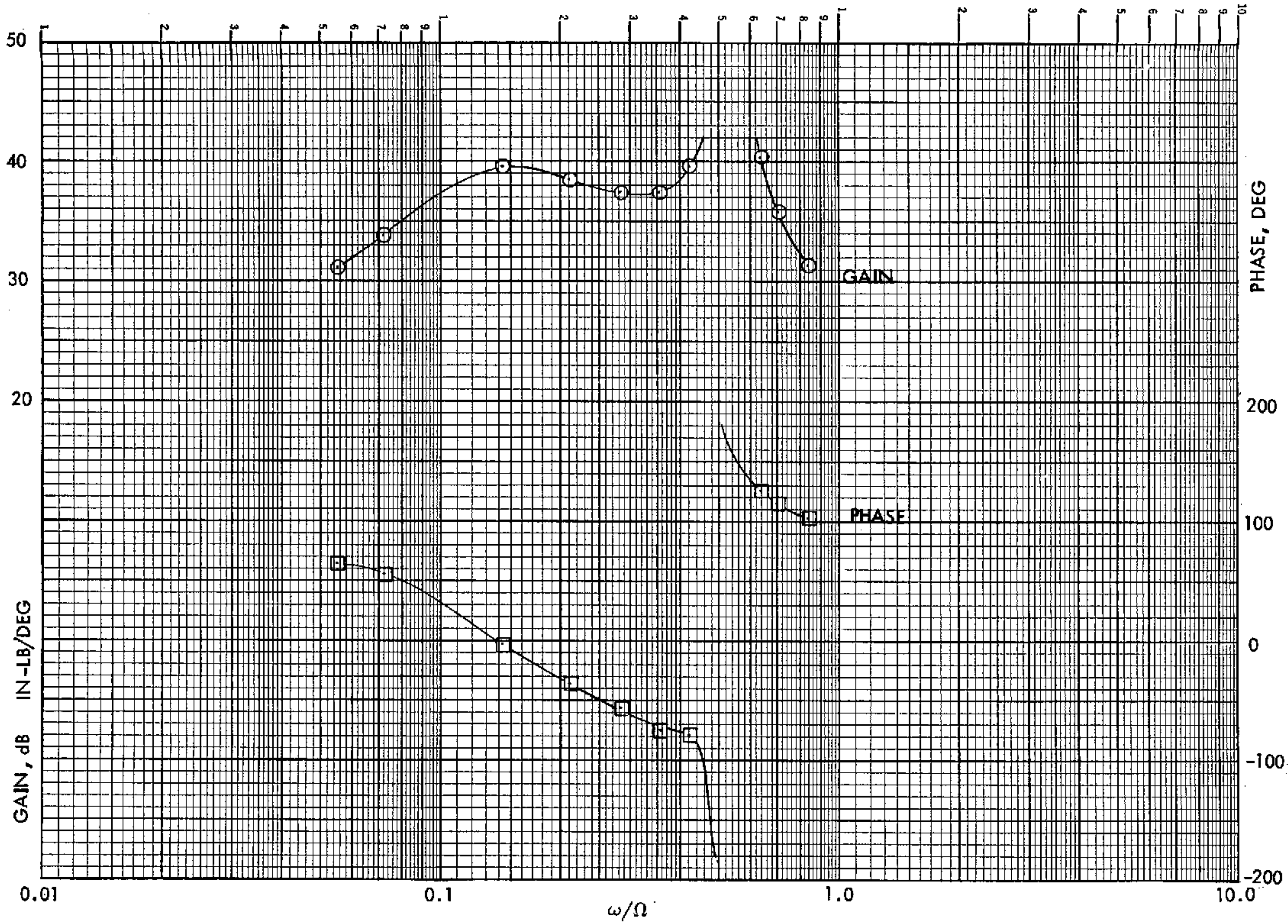

Figure B-54. Configuration 5, Hub Roll Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0.05$, $\theta_o = 12^o$.

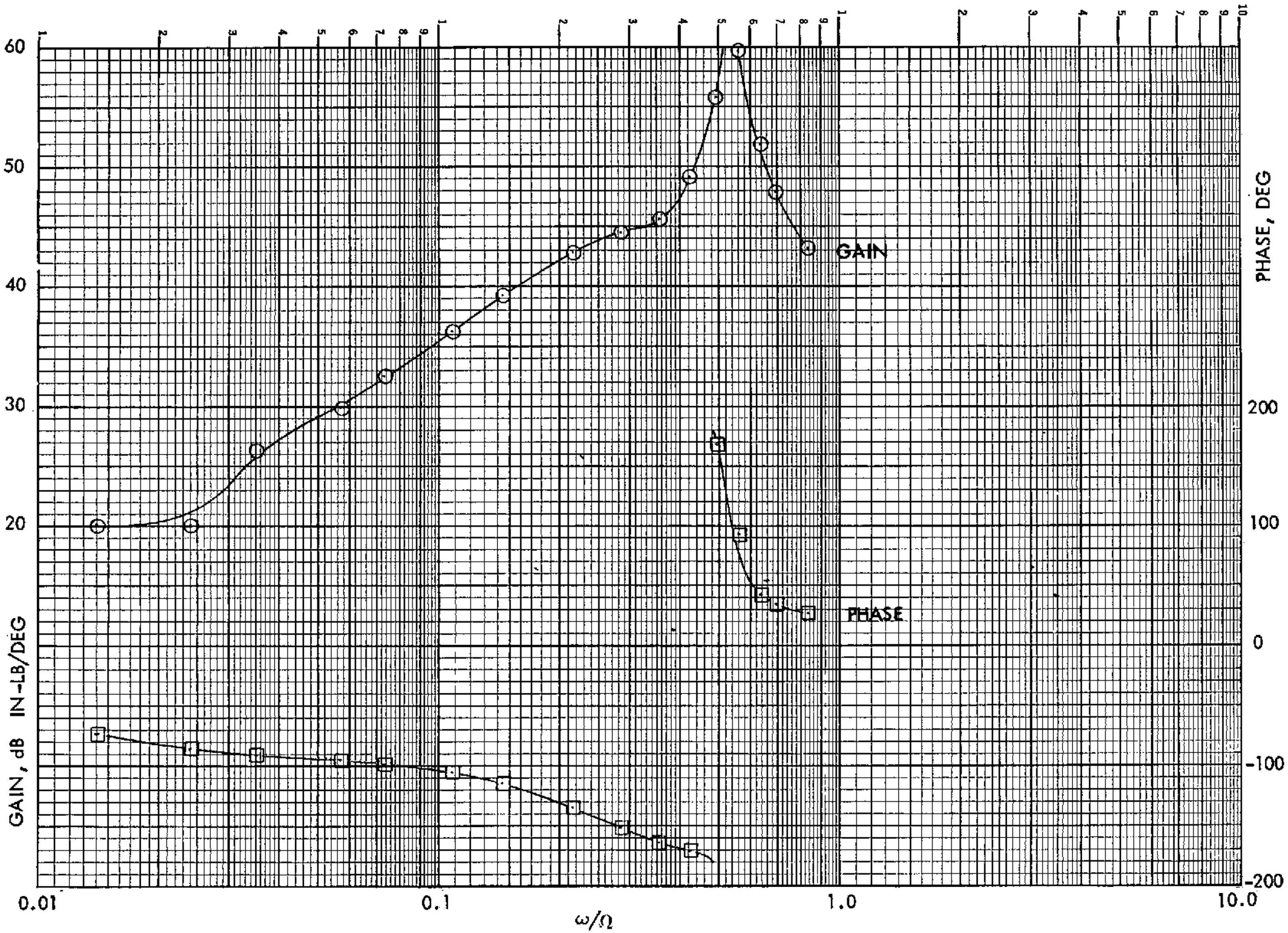

Figure B-55. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0.1$, $\theta_o = 1^\circ$.

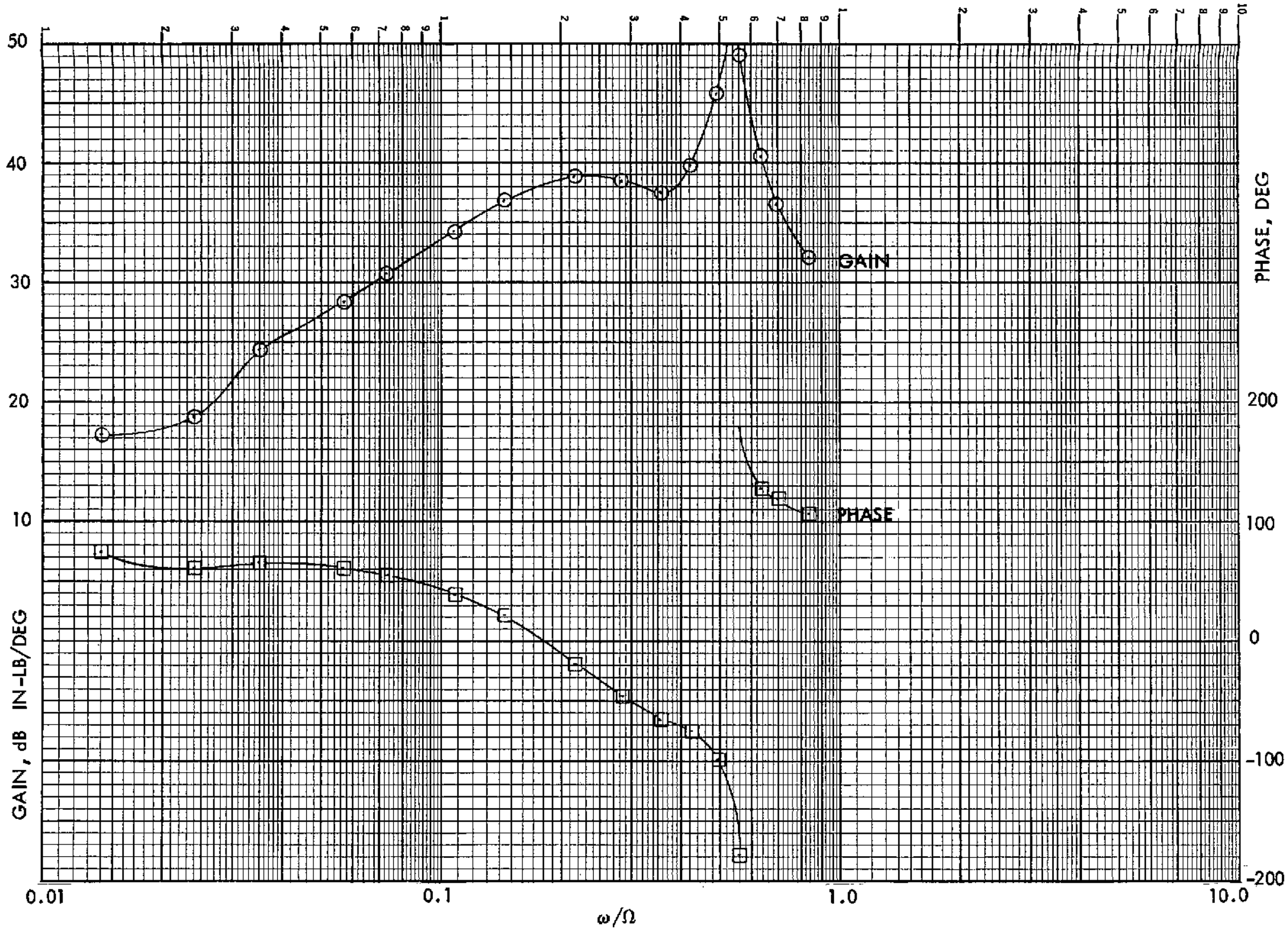

Figure B-56. Configuration 5, Hub Roll Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0.1$, $\theta_o = 1^{\circ}$.

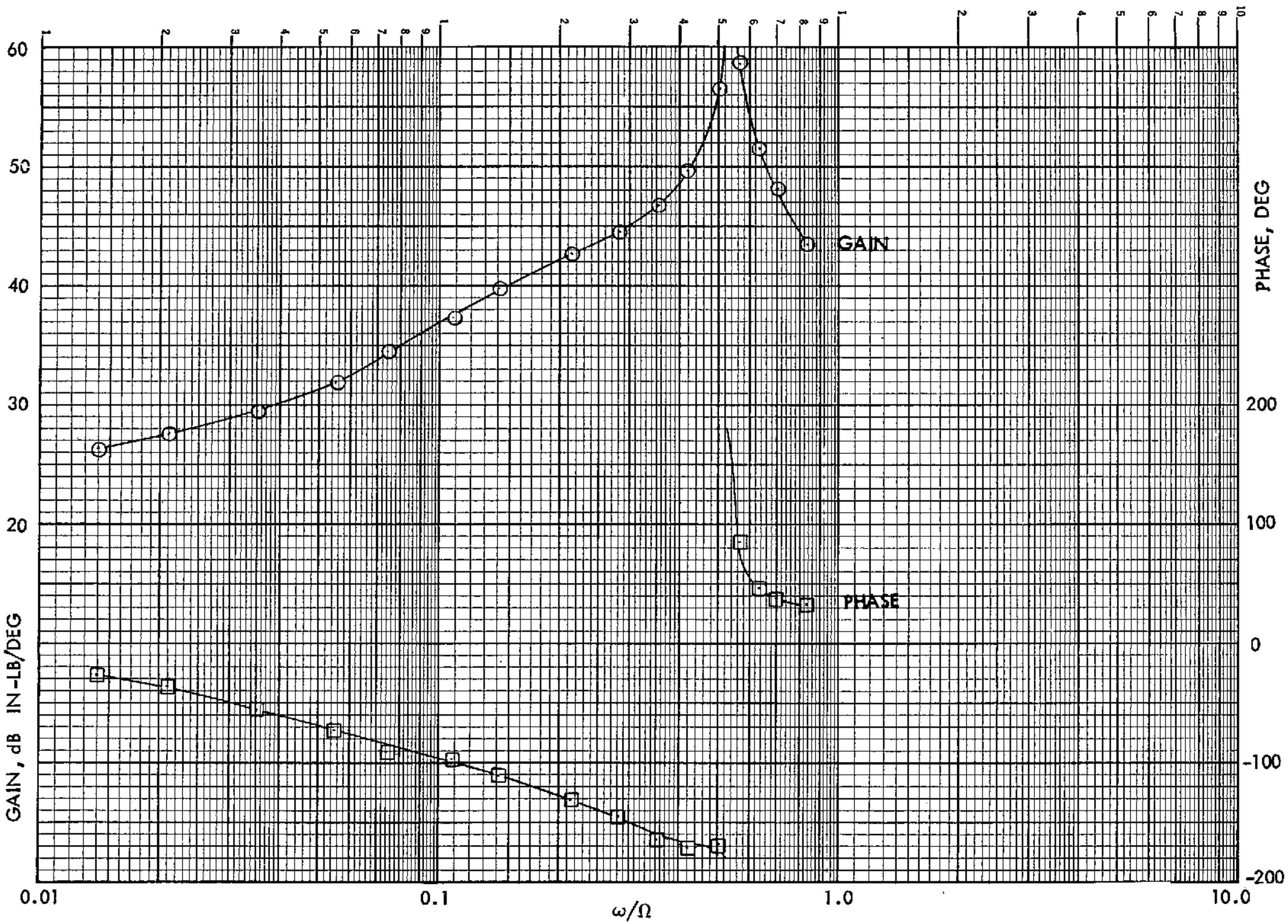

Figure B-57. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0.1$, $\theta_o = 12^{\circ}$.

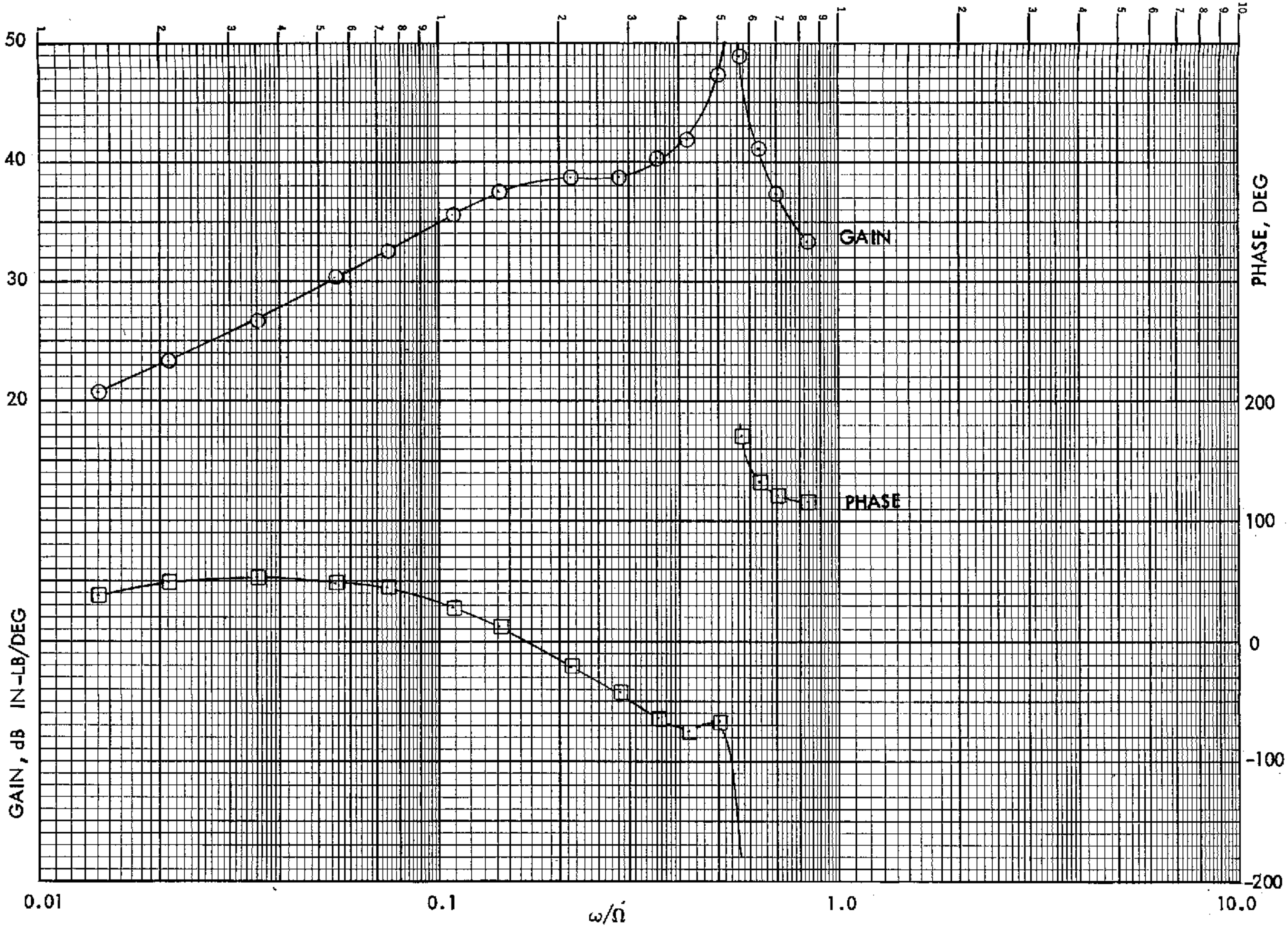

Figure B-58. Configuration 5, Hub Roll Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0.1$, $\theta_o = 12^\circ$.

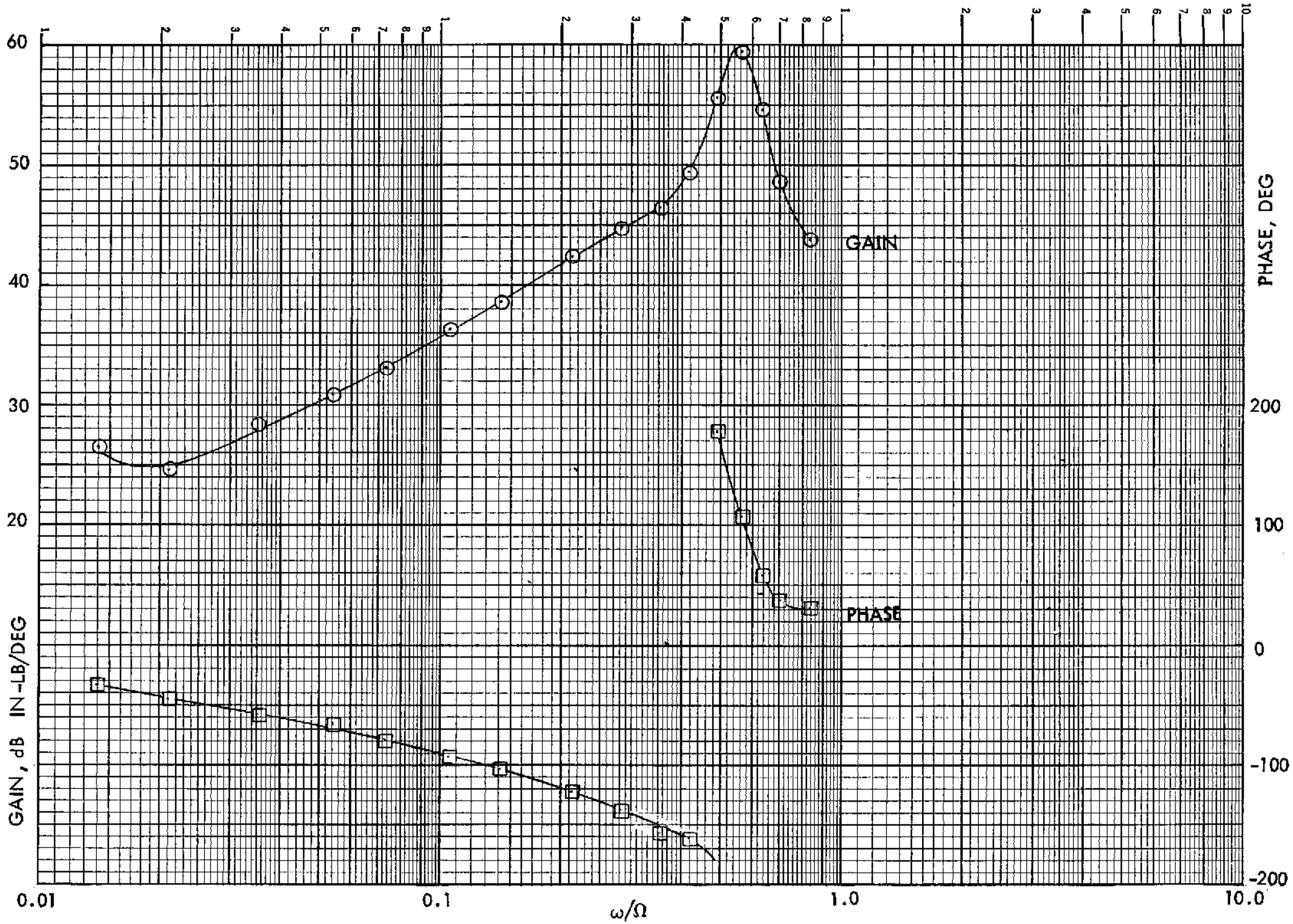

Figure B-59. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0.26$, $\theta_o = 1^\circ$.

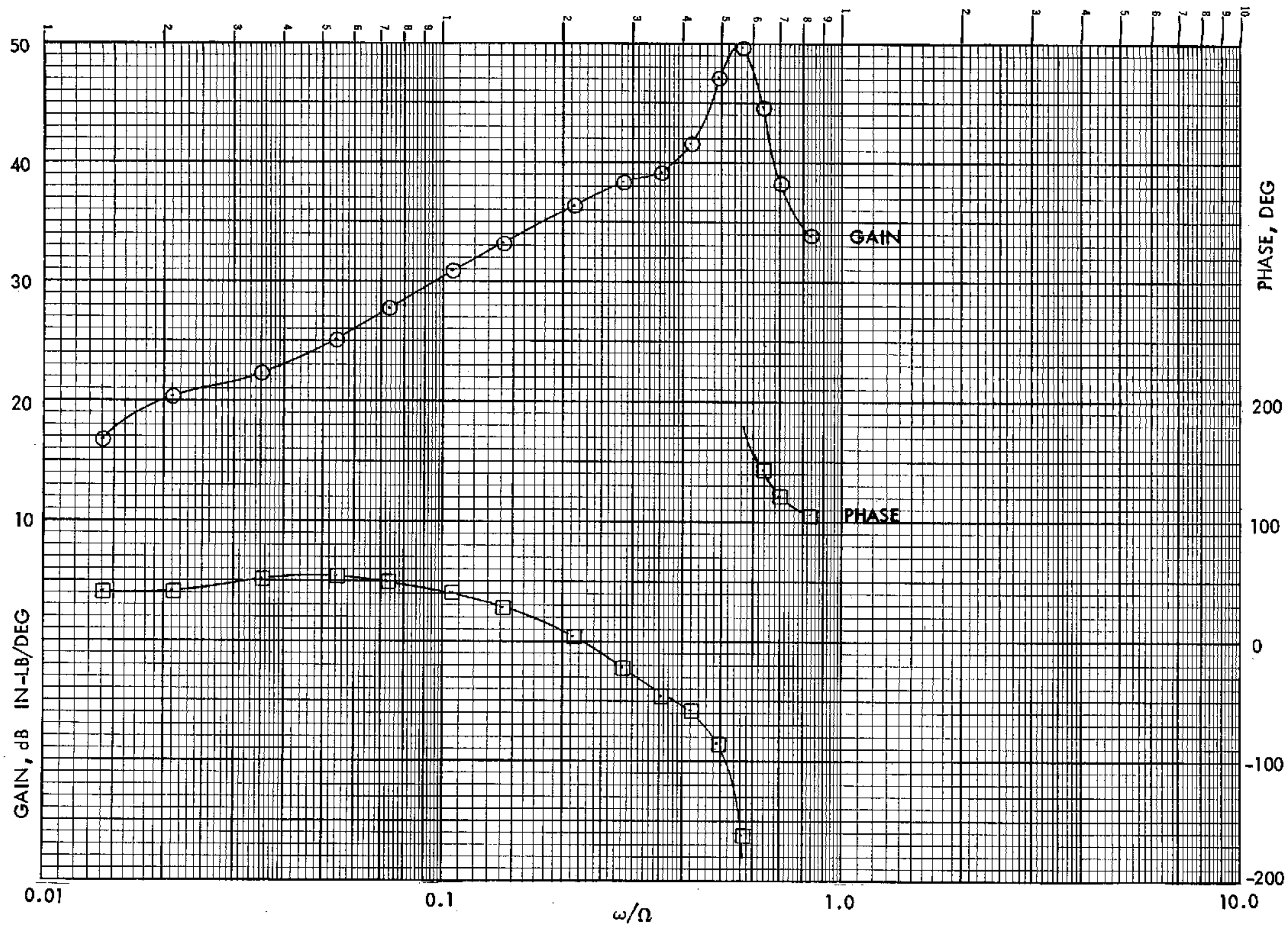

Figure B-60. Configuration 5, Hub Roll Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0.26$, $\theta_o = 1^\circ$.

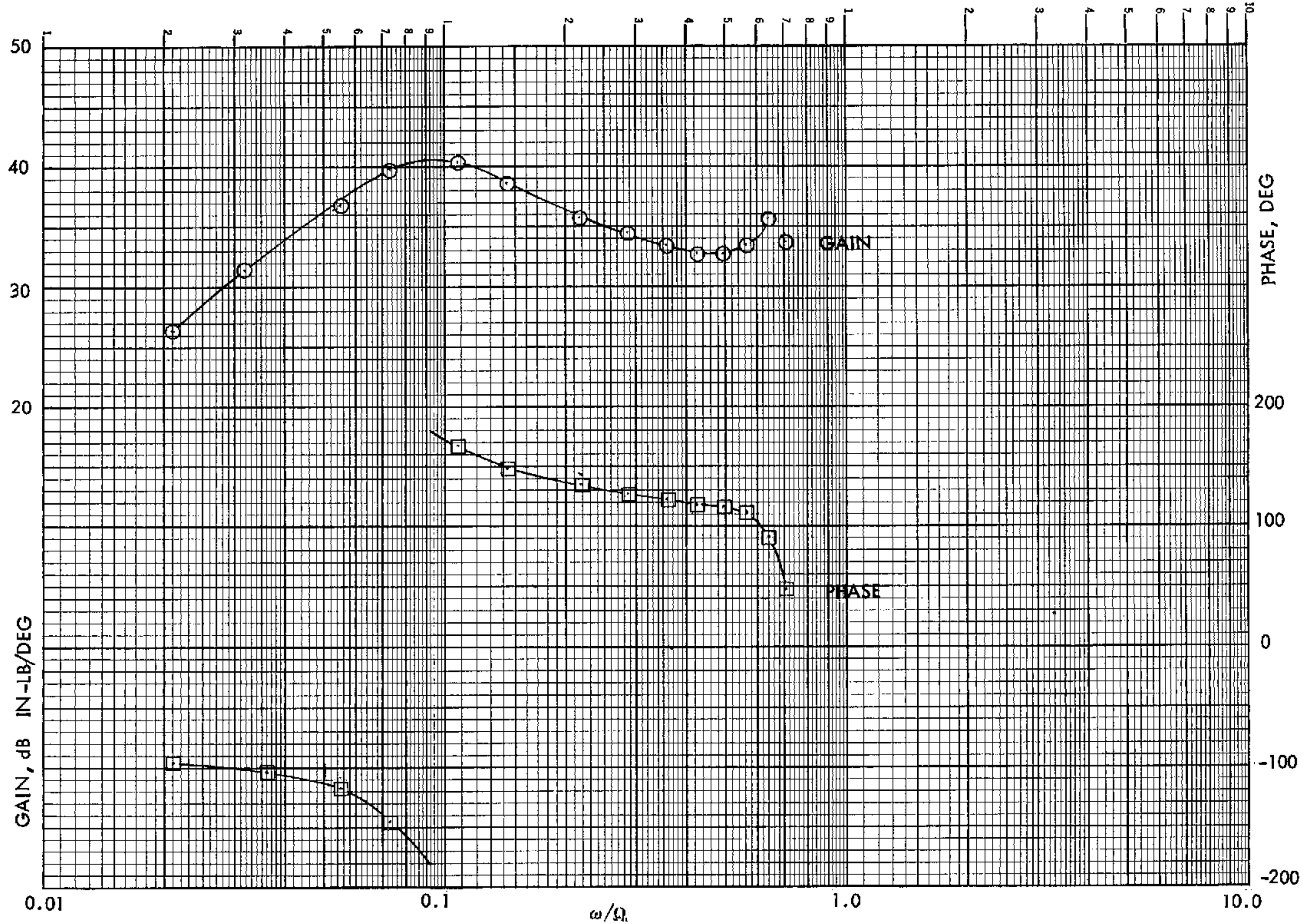

Figure B-61. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0.26$, $\theta_o = 12^\circ$.

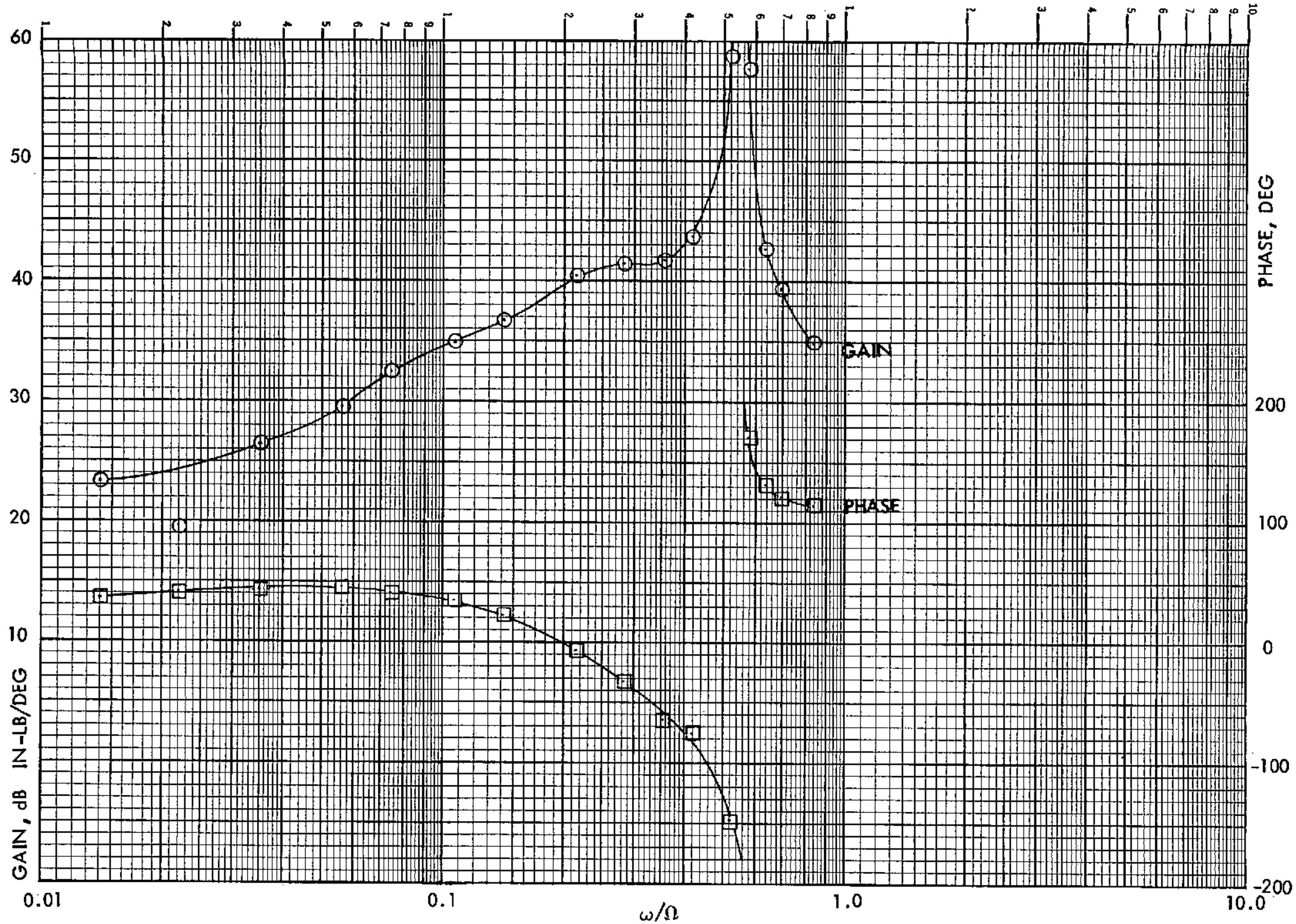

Figure B-62. Configuration 5, Hub Roll Moment Frequency Response to Shaft Pitch. 850 RPM, $\mu = 0.26$, $\theta_o = 12^\circ$.

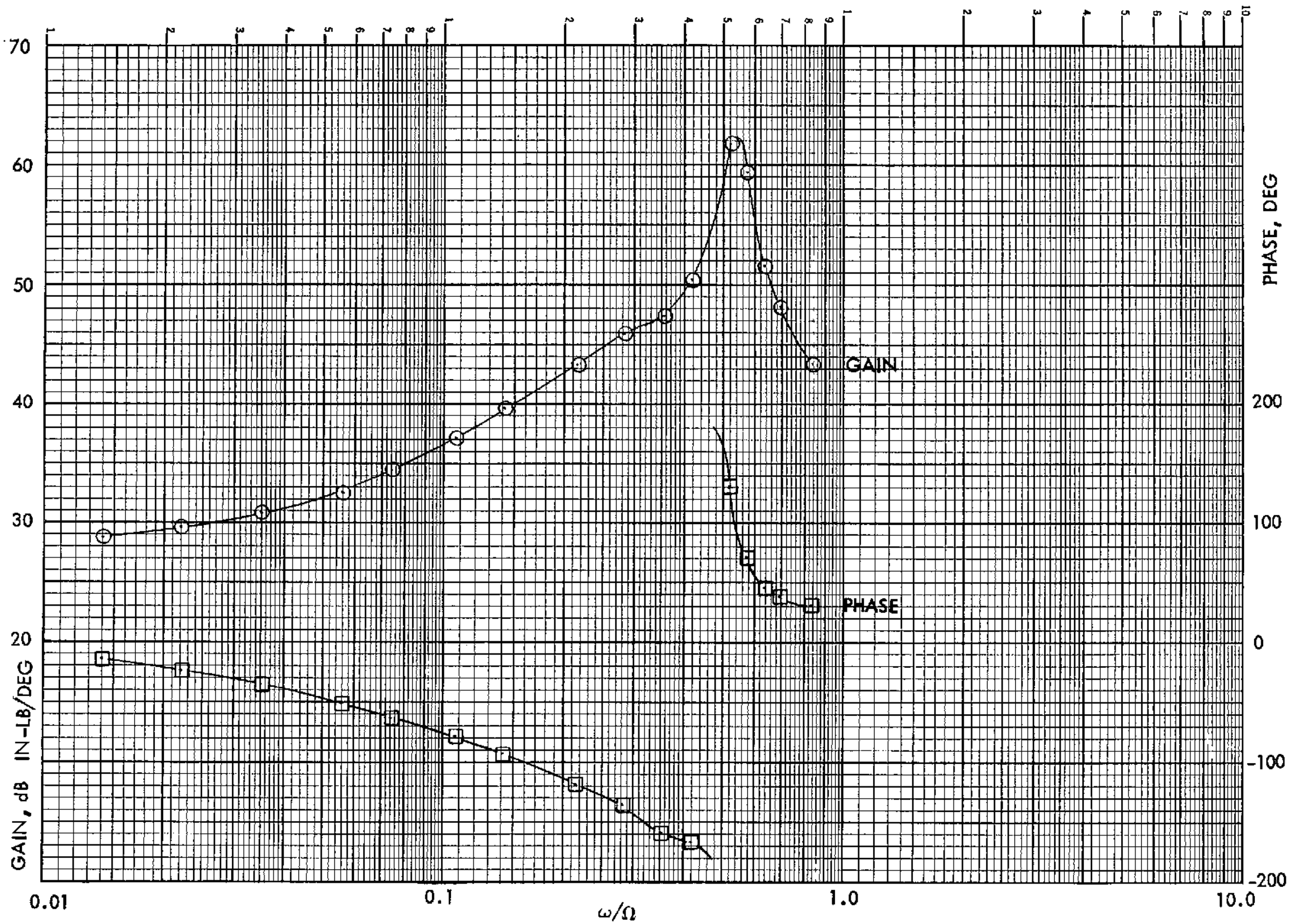

Figure B-63. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0$, $\theta_o = 0°$.

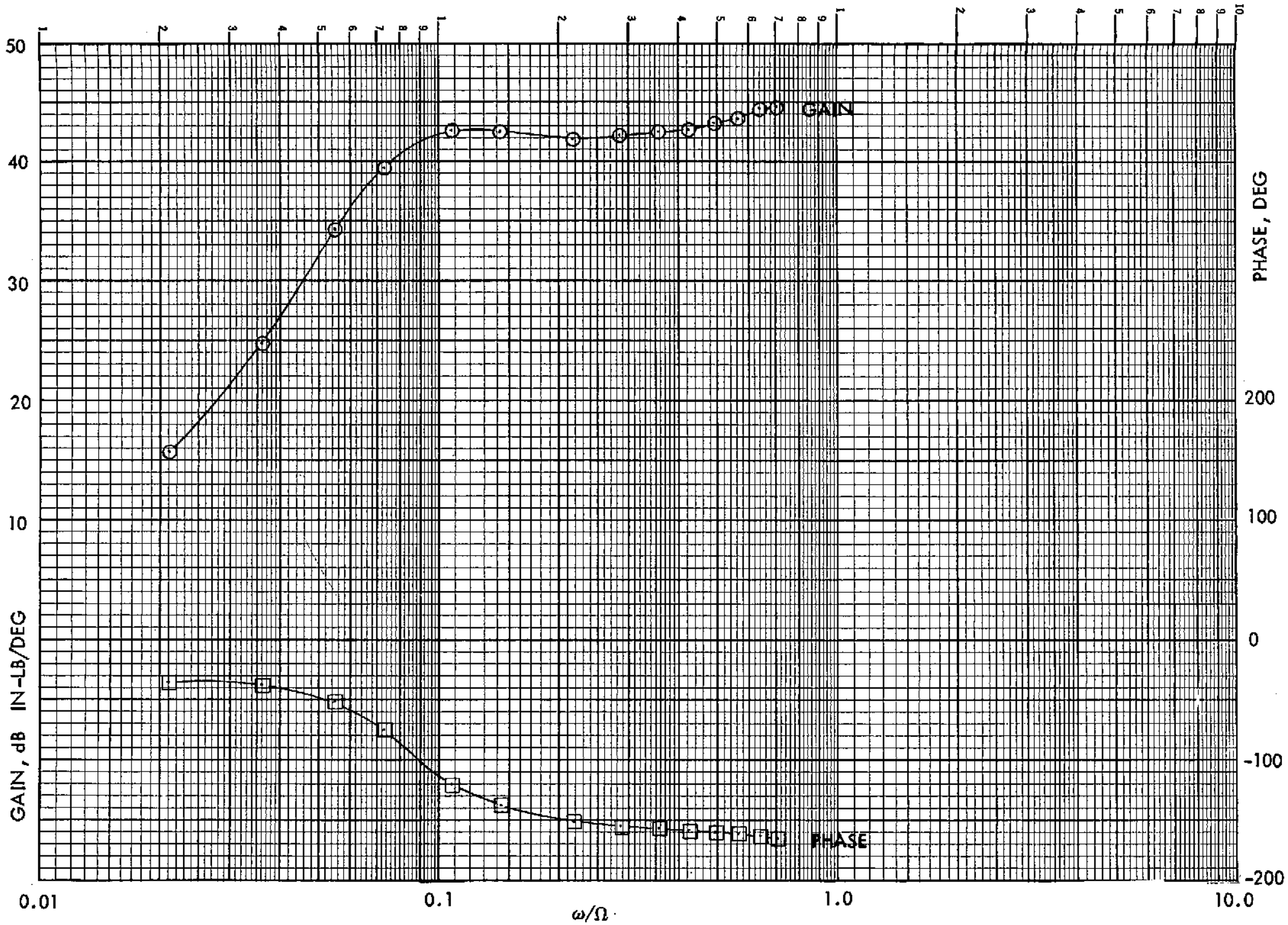

Figure B-64. Configuration 5, Hub Roll Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0$, $\theta_o = 0^o$.

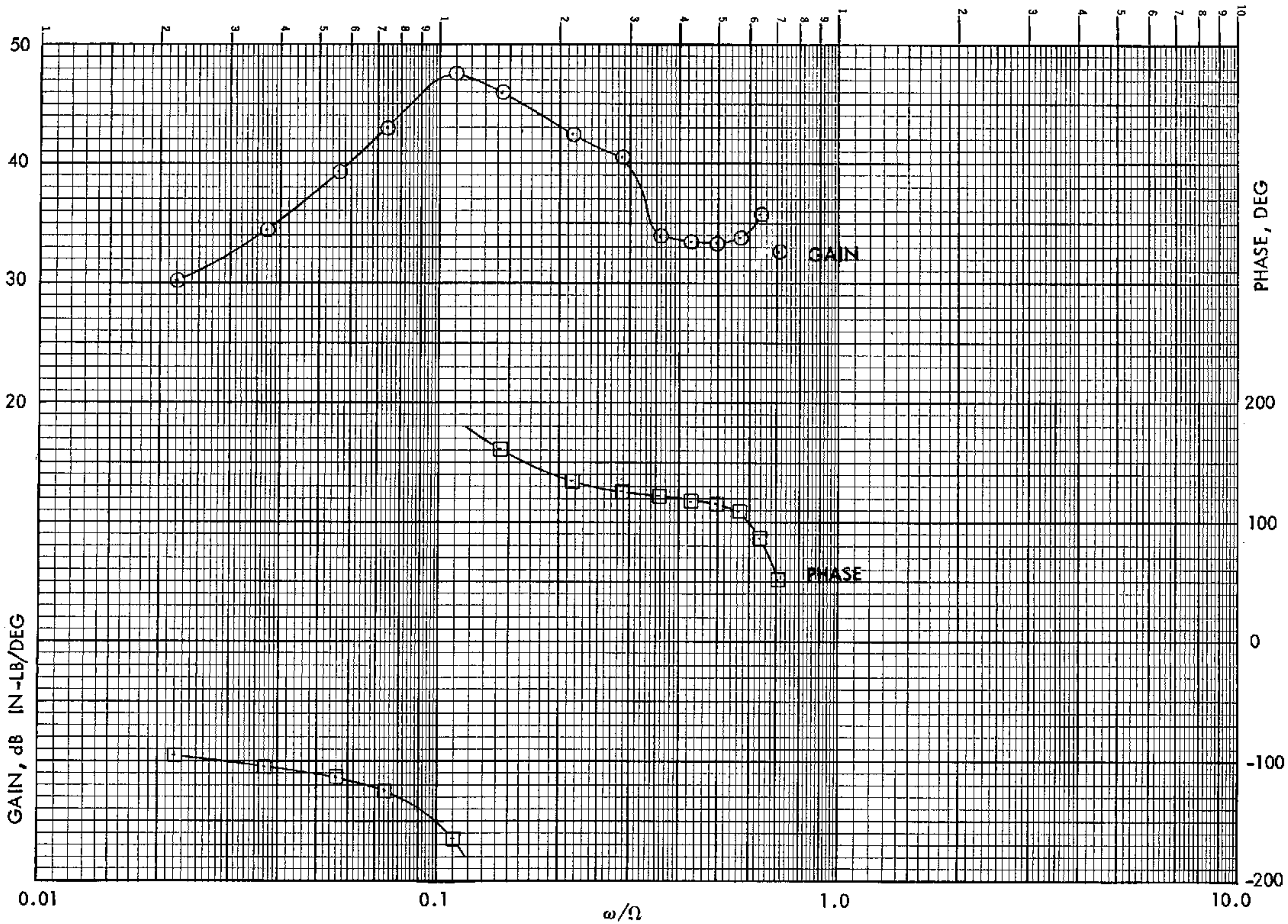

Figure B-65. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0$, $\theta_o = 2^o$.

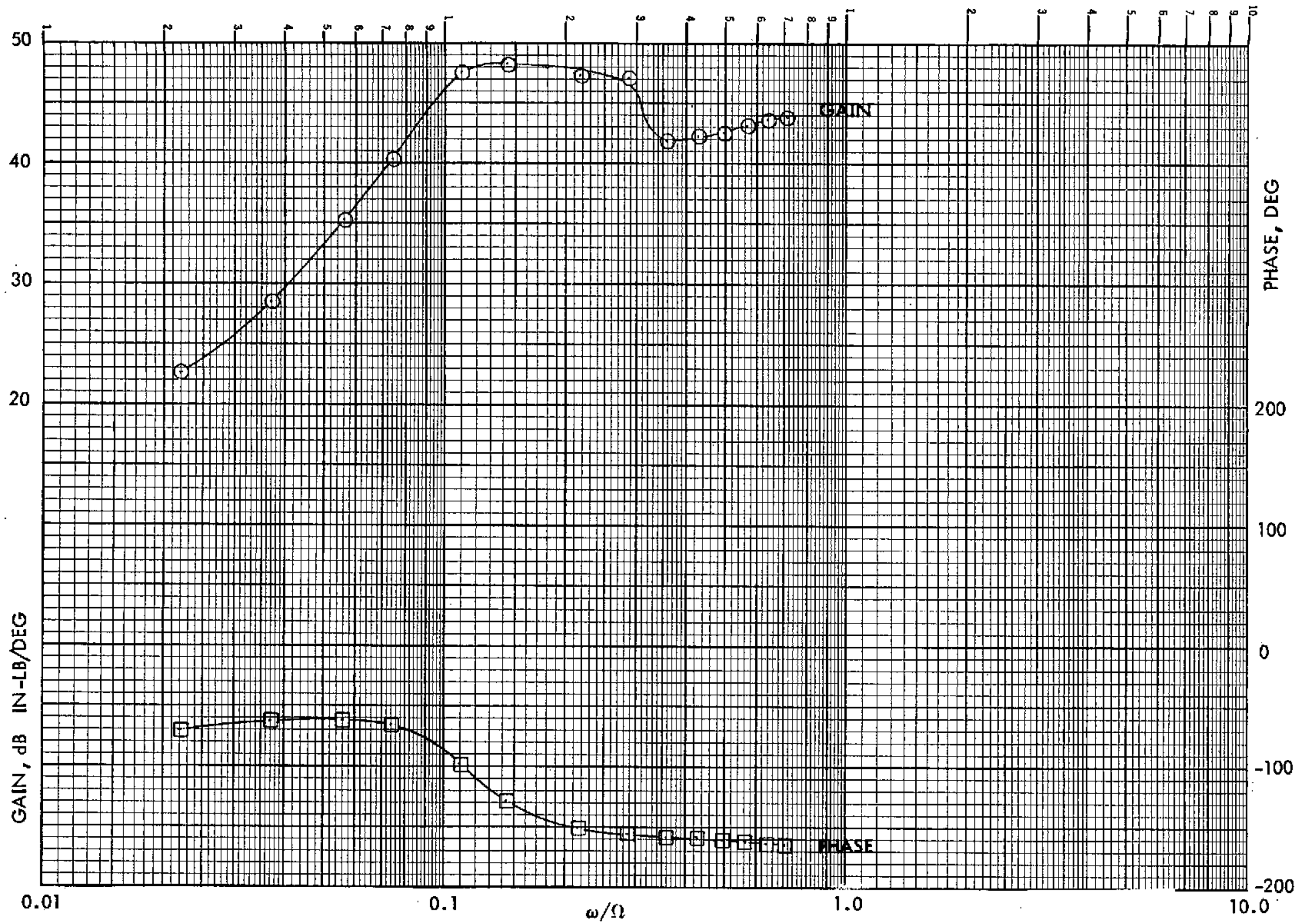

Figure B-66. Configuration 5, Hub Roll Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0$, $\theta_o = 2^o$.

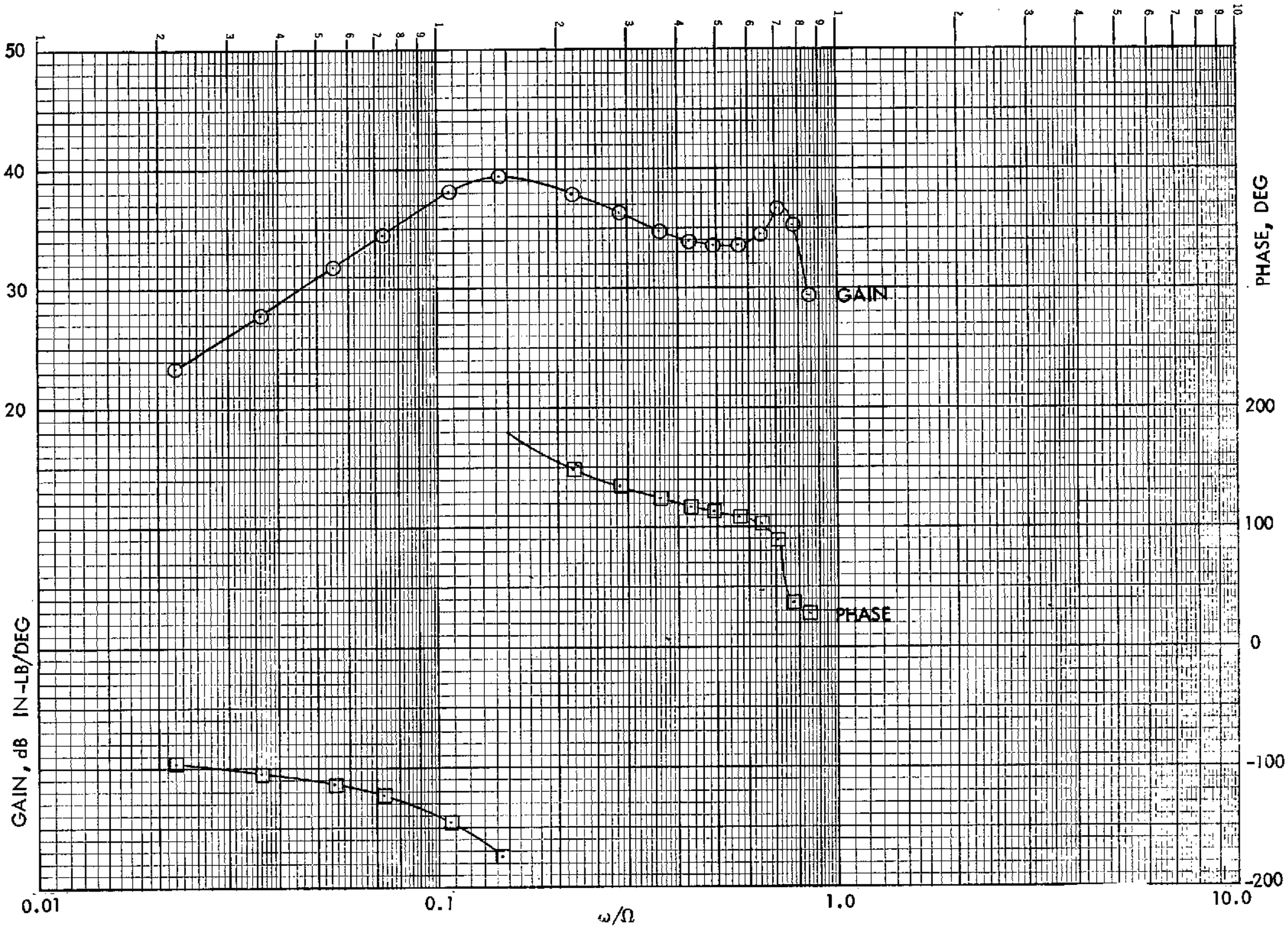

Figure B-67. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0$, $\theta_o = 4°$.

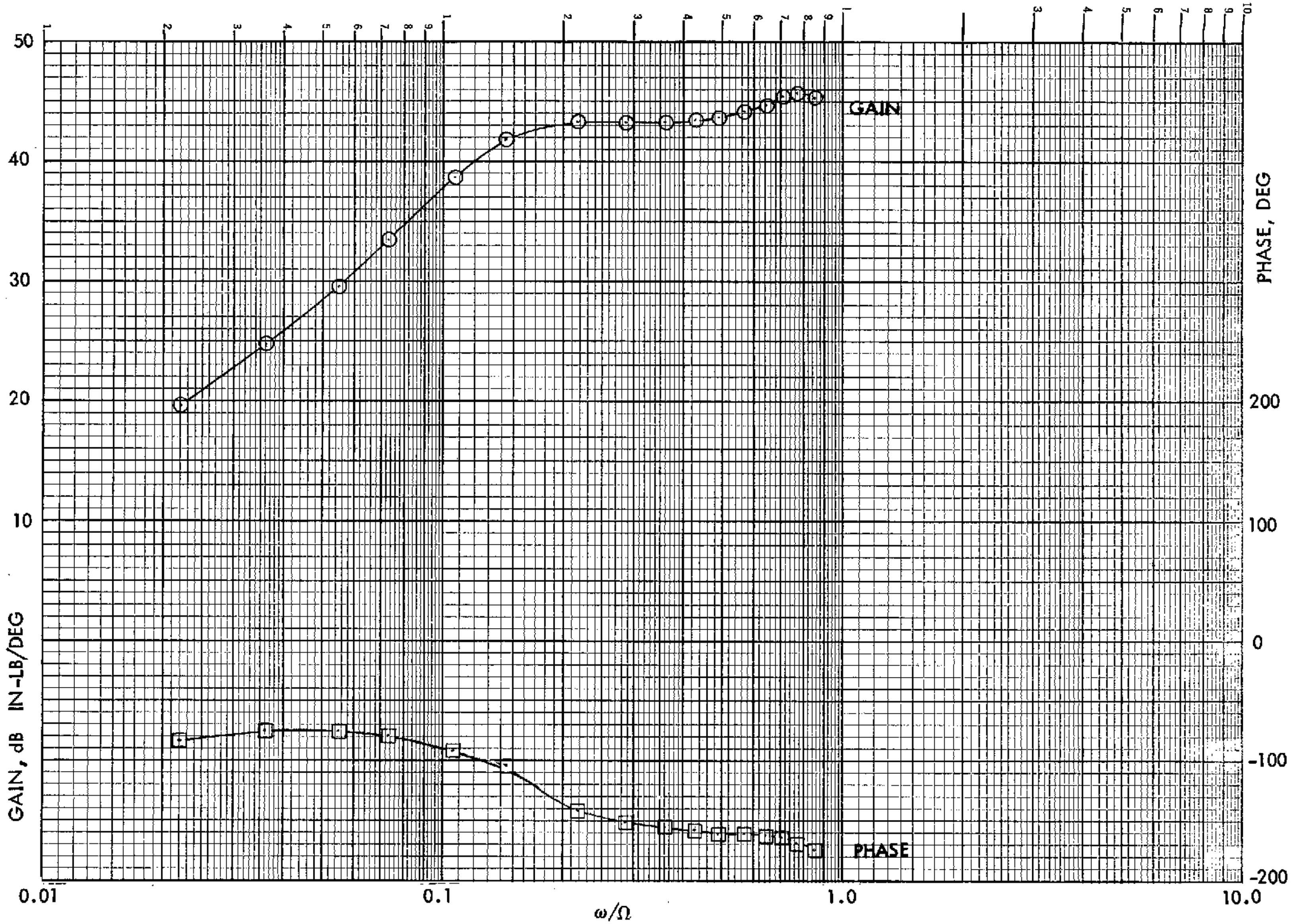

Figure B-68. Configuration 5, Hub Roll Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0$, $\theta_o = 4^o$.

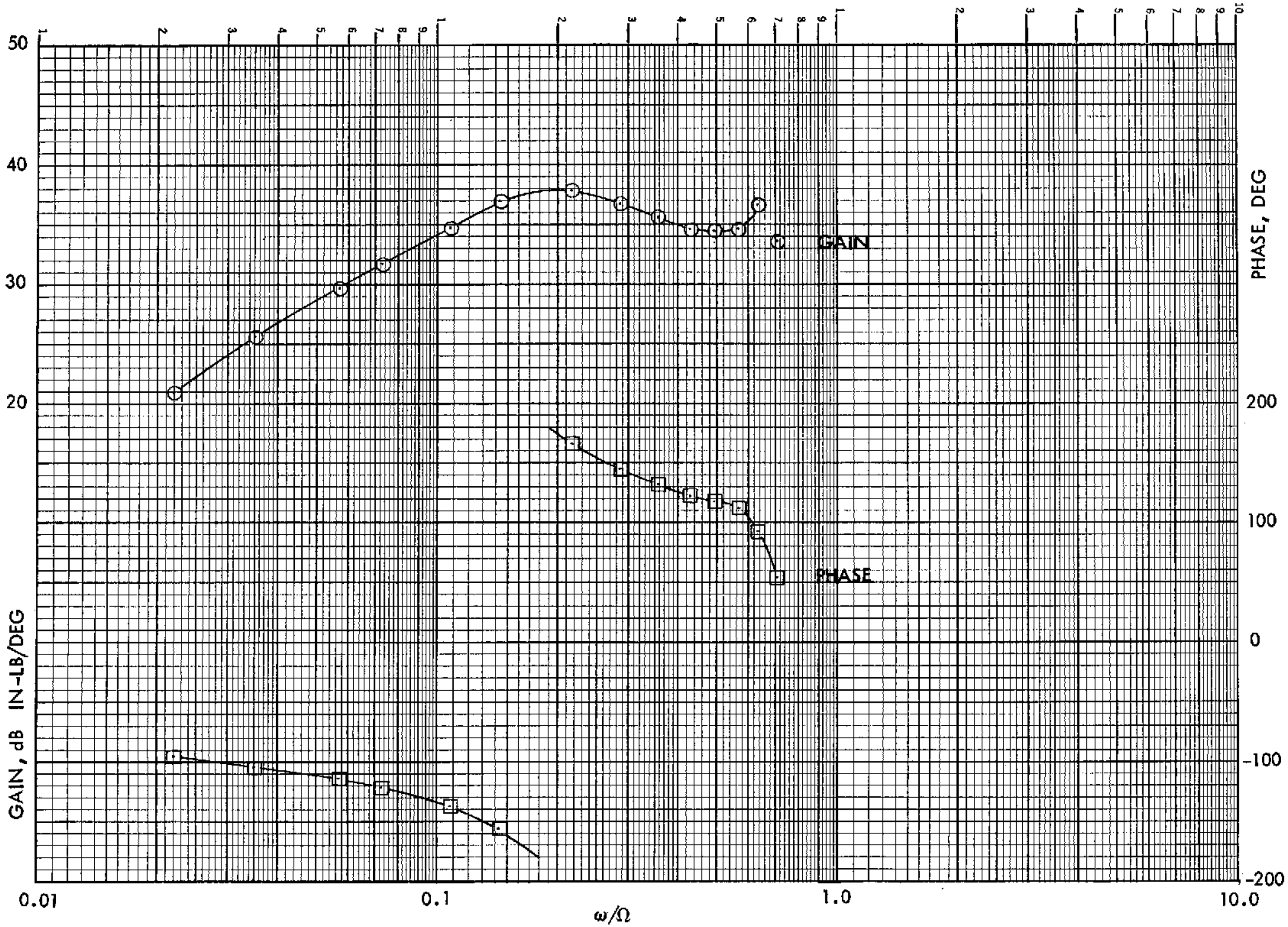

Figure B-69. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0$, $\theta_o = 8^o$.

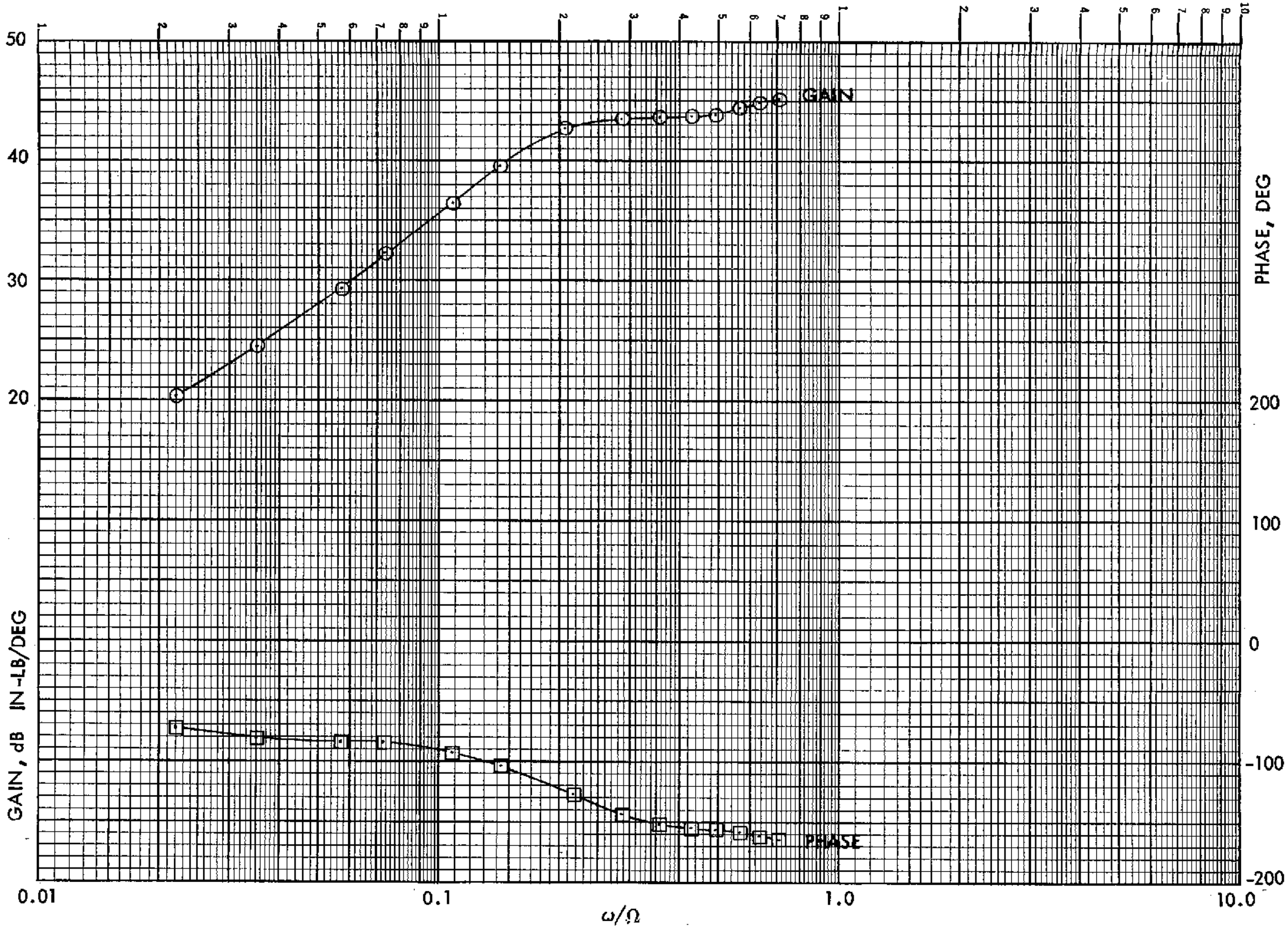

Figure B-70. Configuration 5, Hub Roll Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0$, $\theta_o = 8°$.

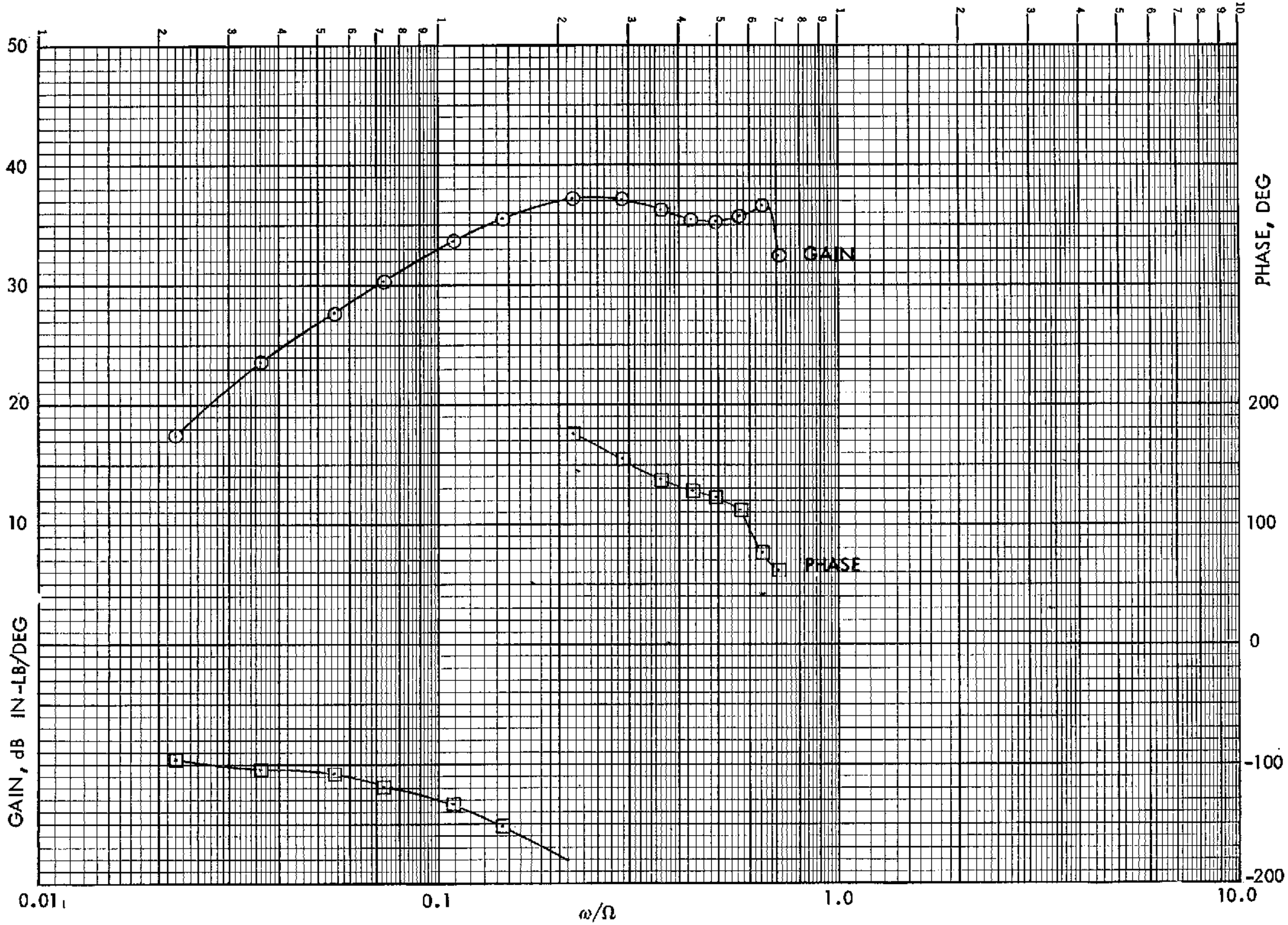

Figure B-71. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0$, $\theta_o = 16°$.

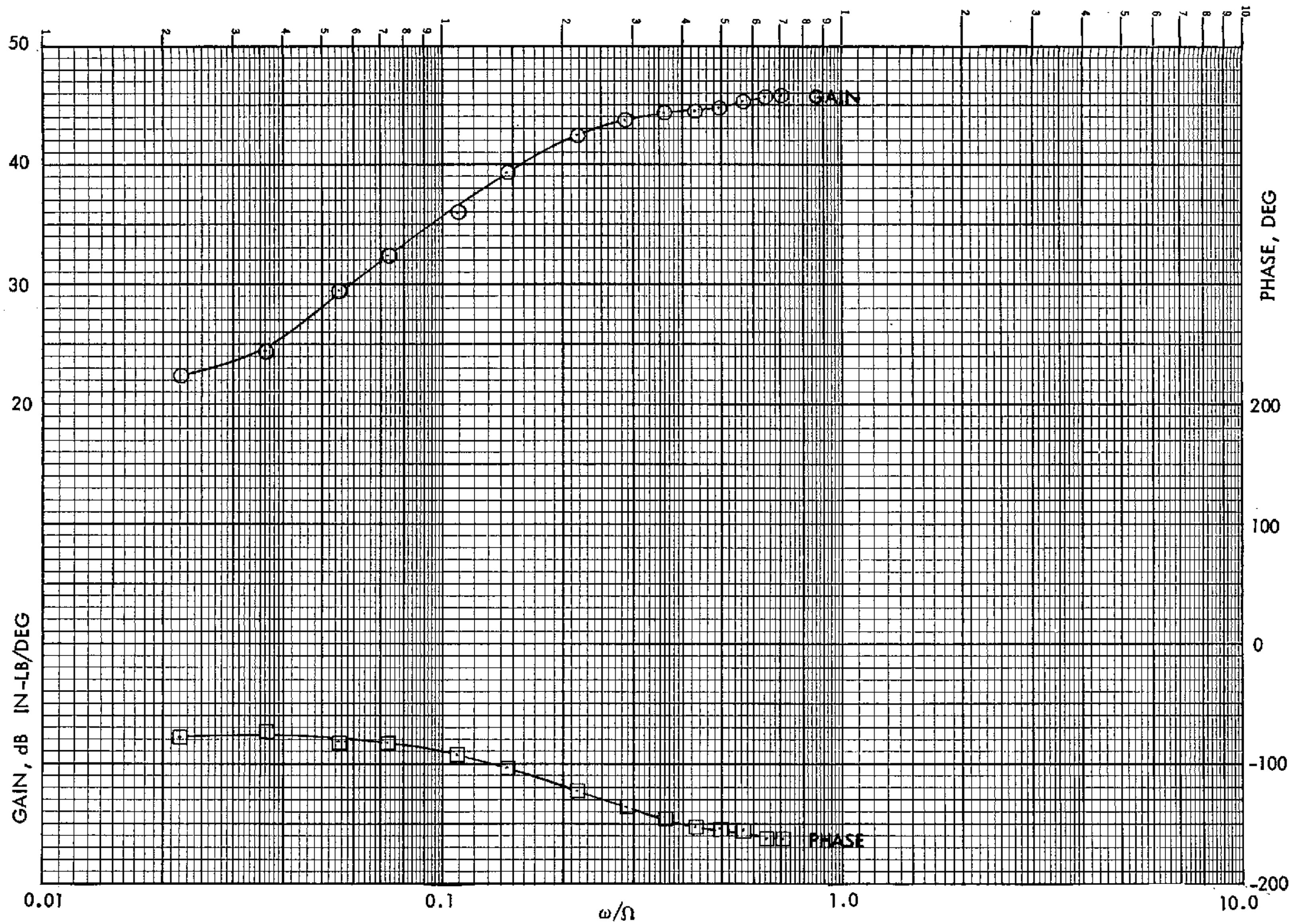

Figure B-72. Configuration 5, Hub Roll Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0$, $\theta_o = 16^{\circ}$.

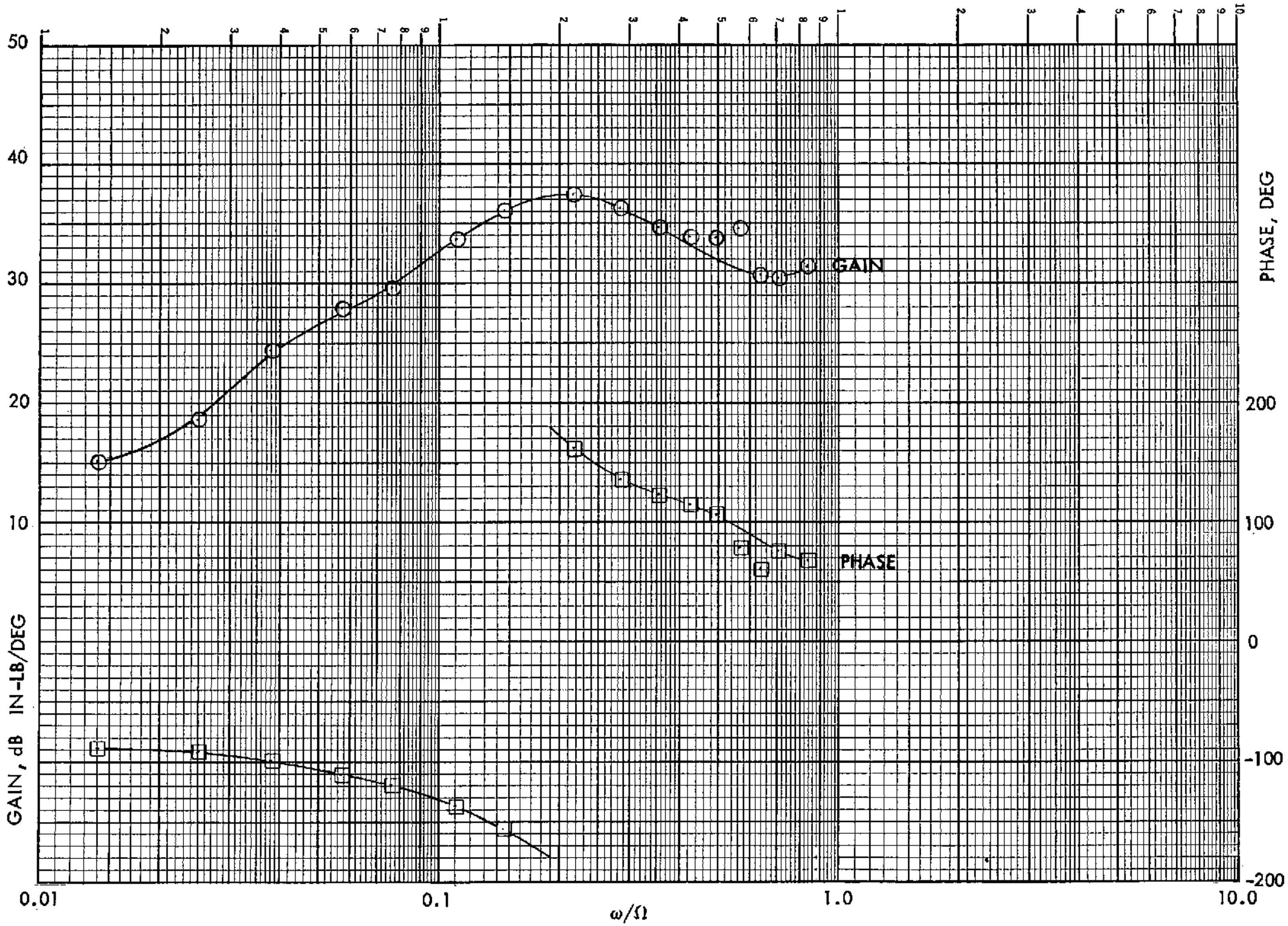

Figure B-73. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0.1$, $\theta_o = 1^o$.

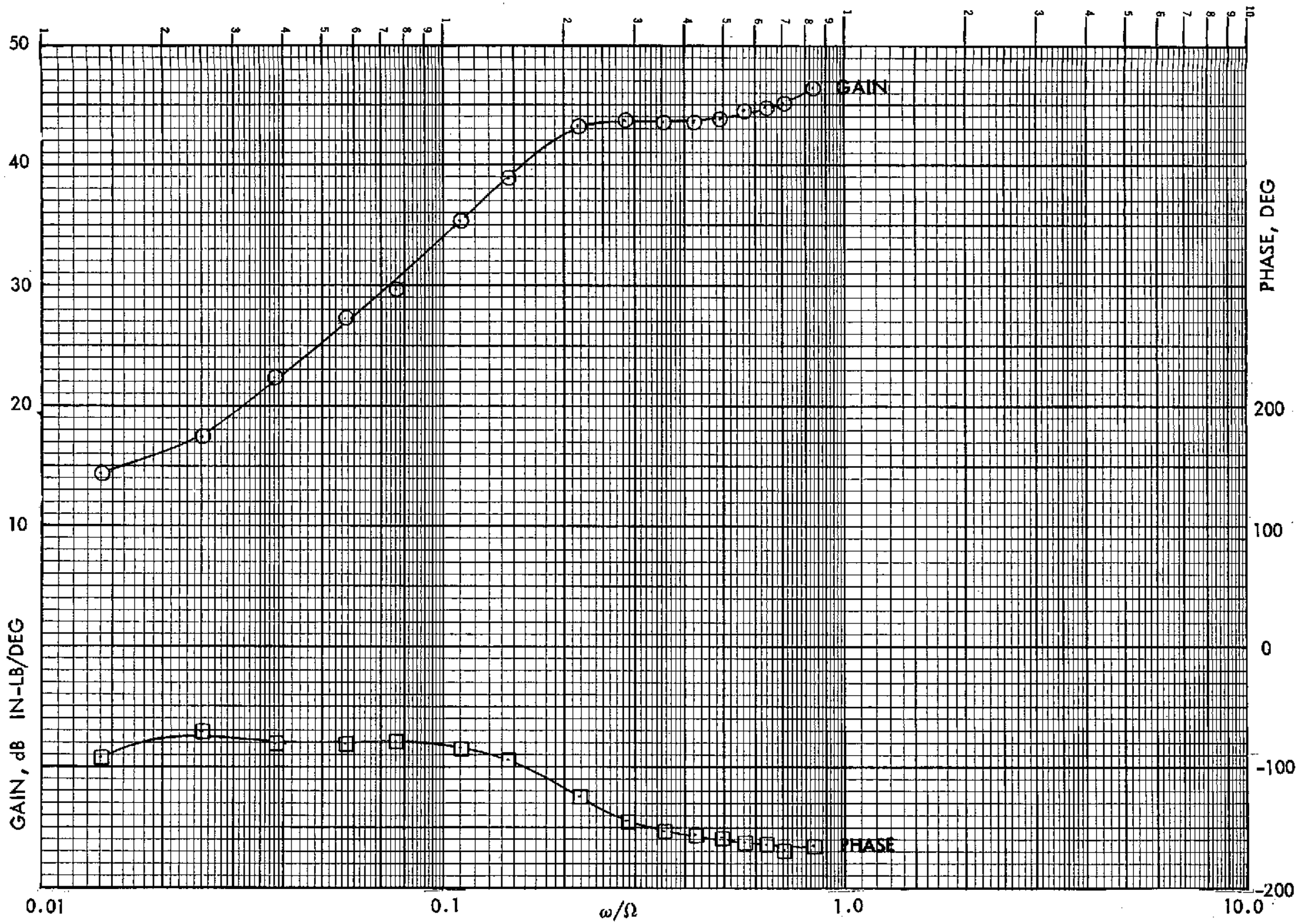

Figure B-74. Configuration 5, Hub Roll Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0.1$, $\theta_o = 1^o$.

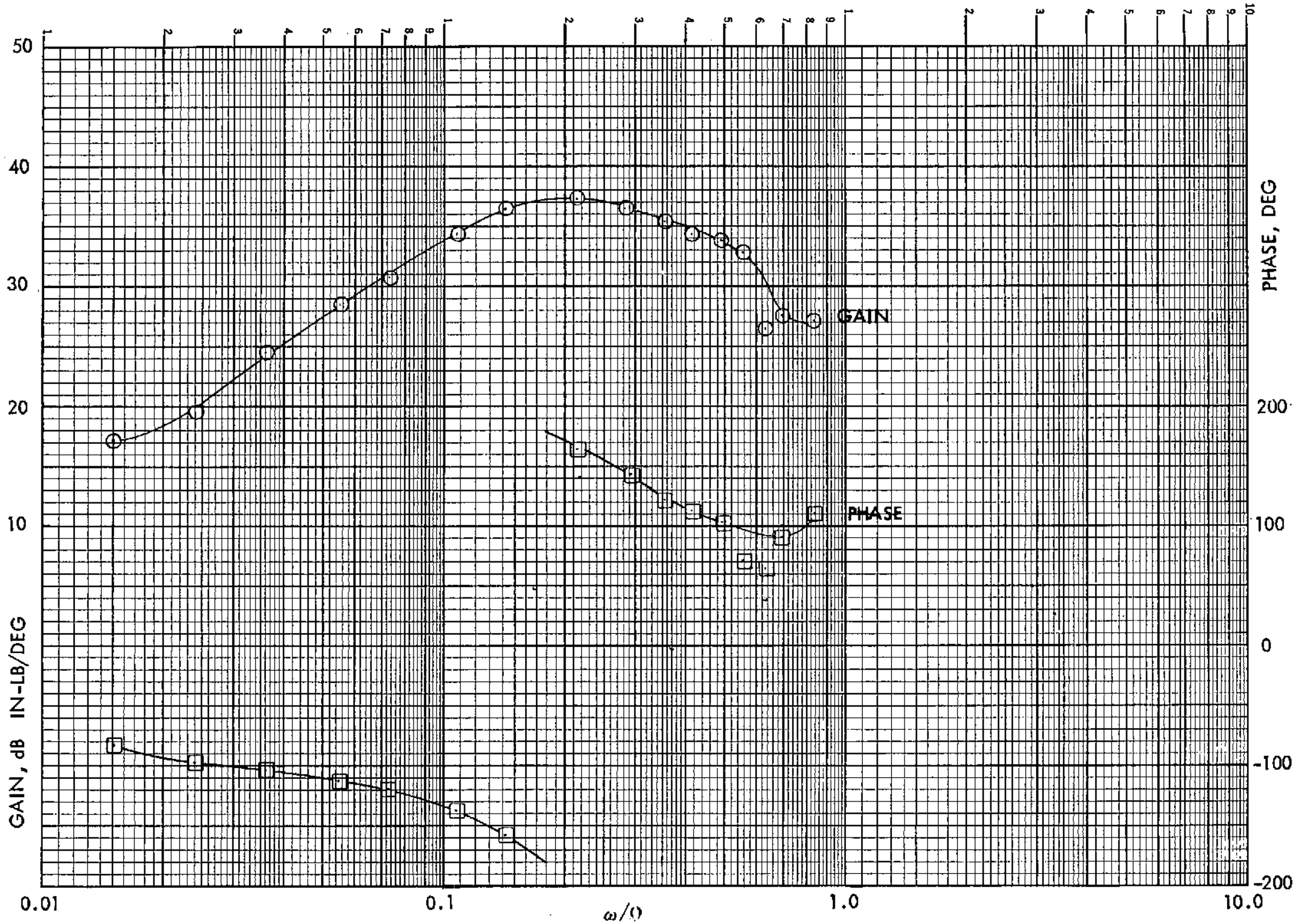

Figure B-75. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0.1$, $\theta_o = 12^o$.

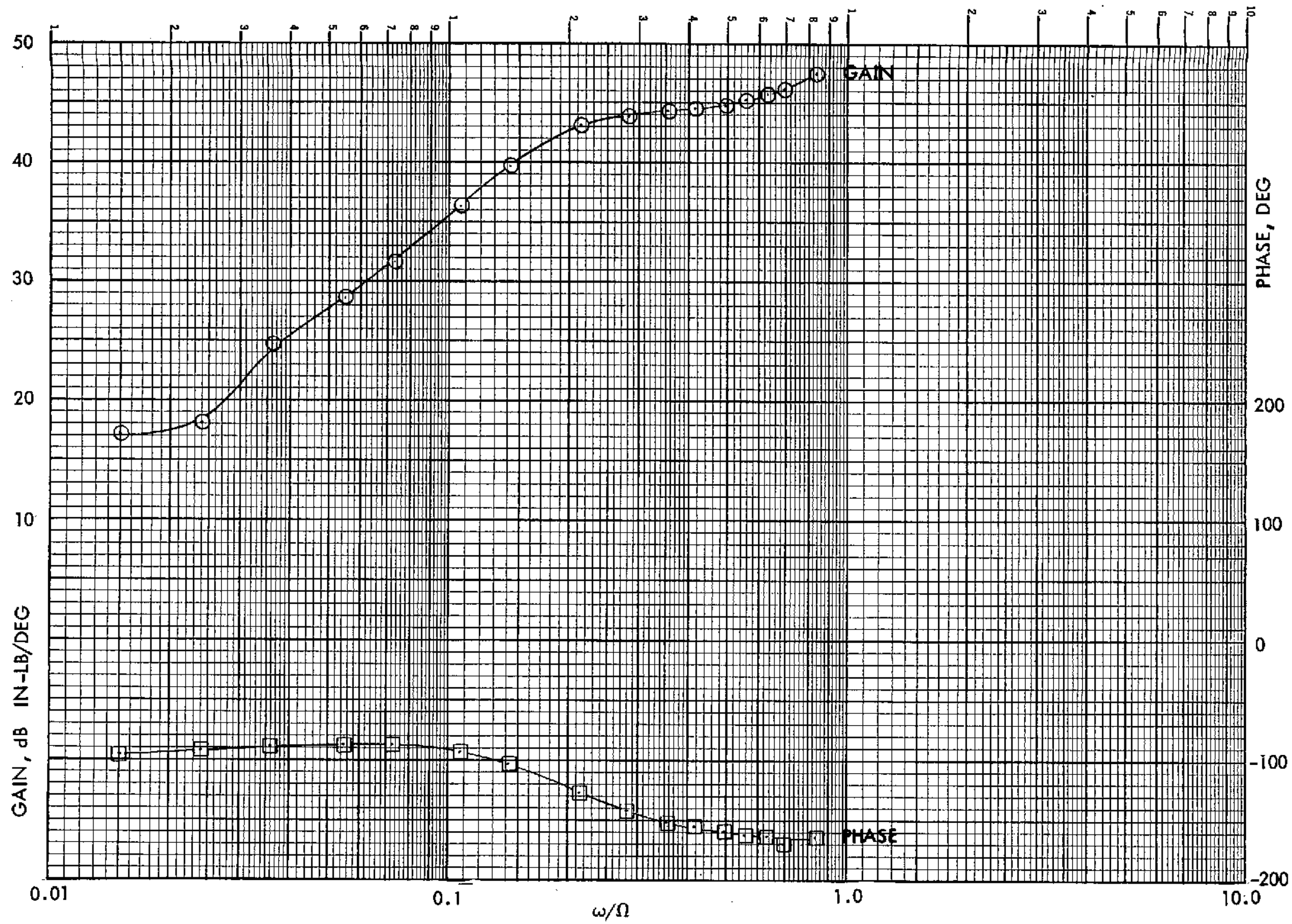

Figure B-76. Configuration 5, Hub Roll Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0.1$, $\theta_o = 12^o$.

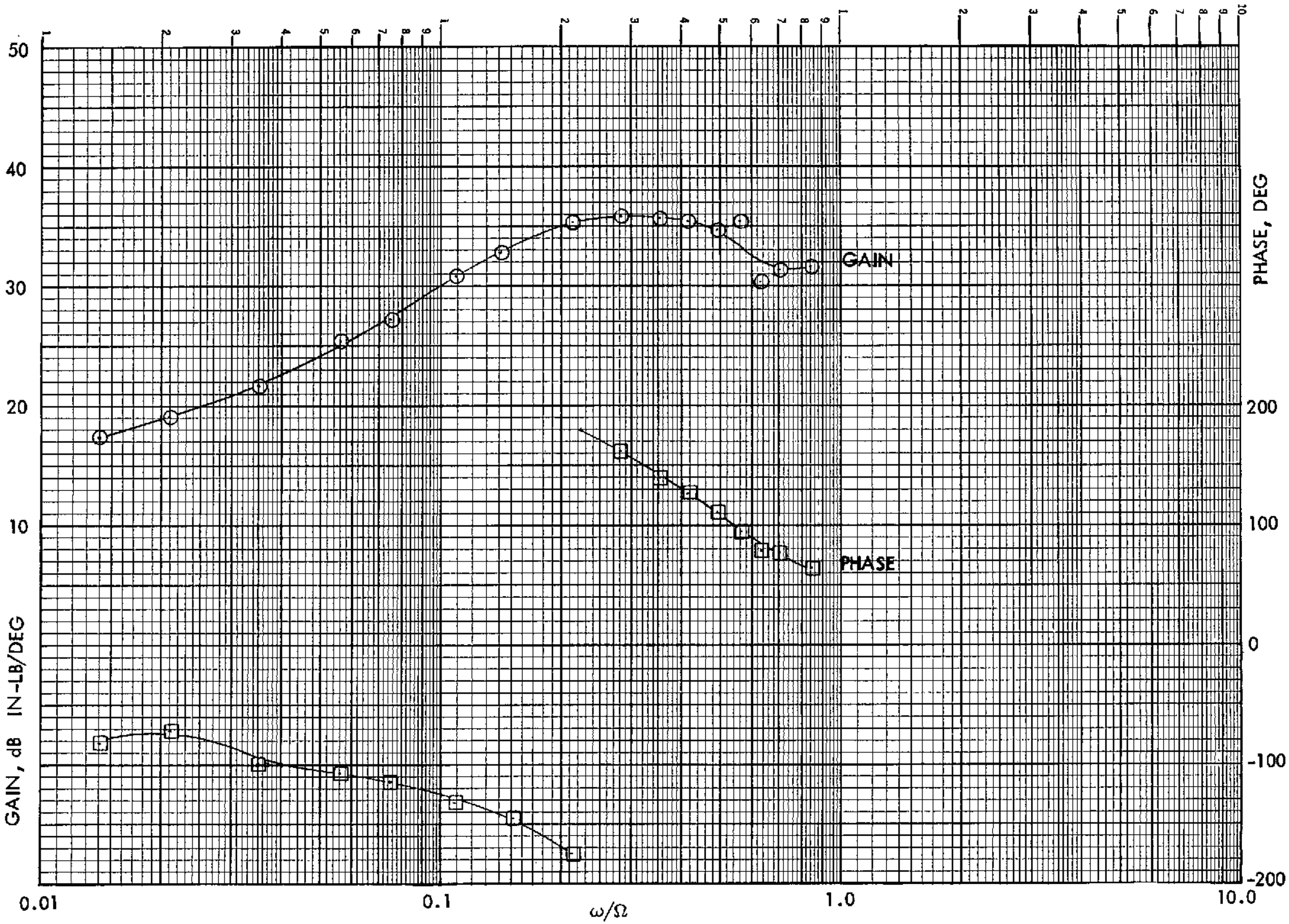

Figure B-77. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0.26$, $\theta_o = 1^{\circ}$.

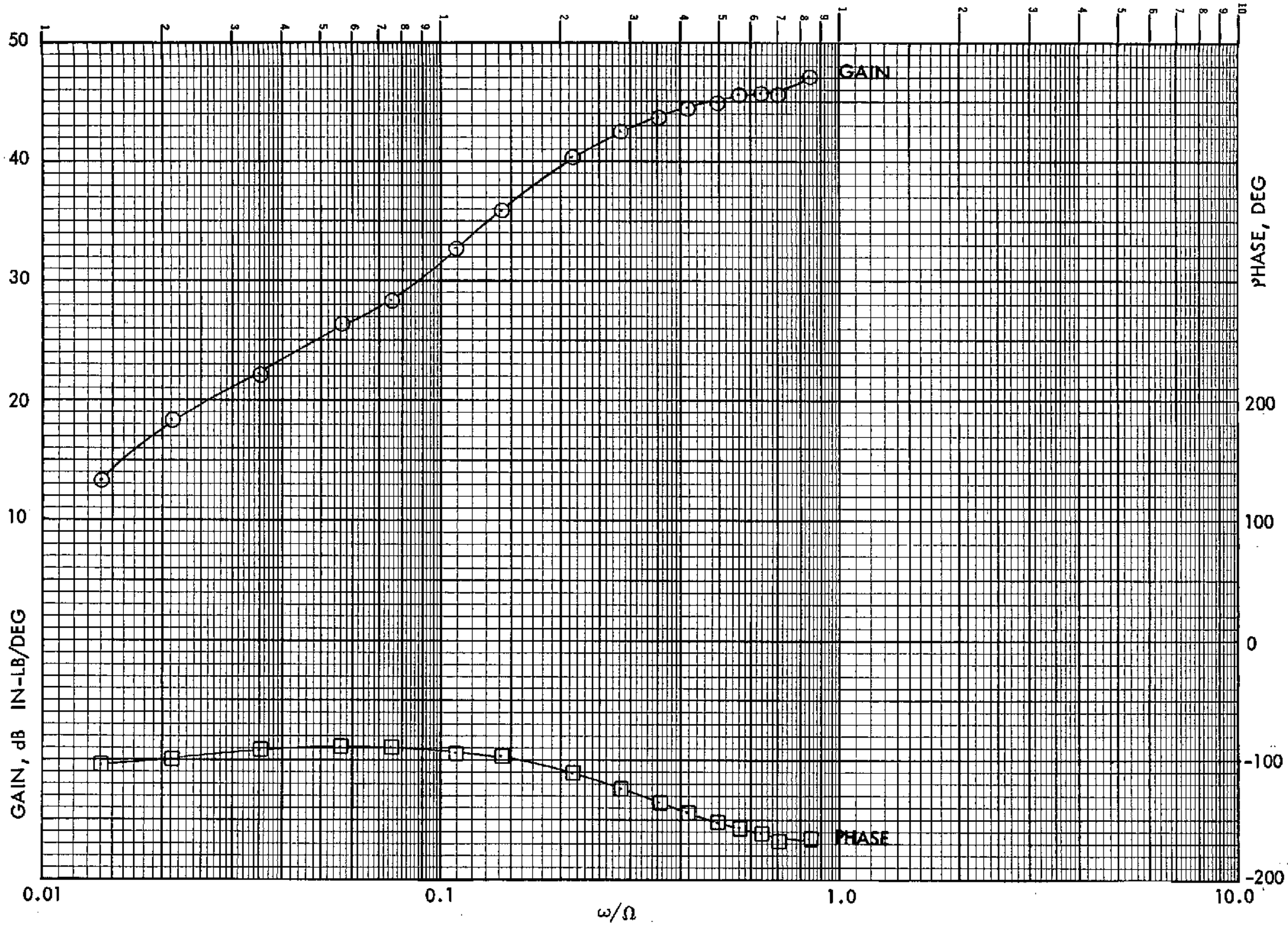

Figure B-78. Configuration 5, Hub Roll Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0.26$, $\theta_o = 1^o$.

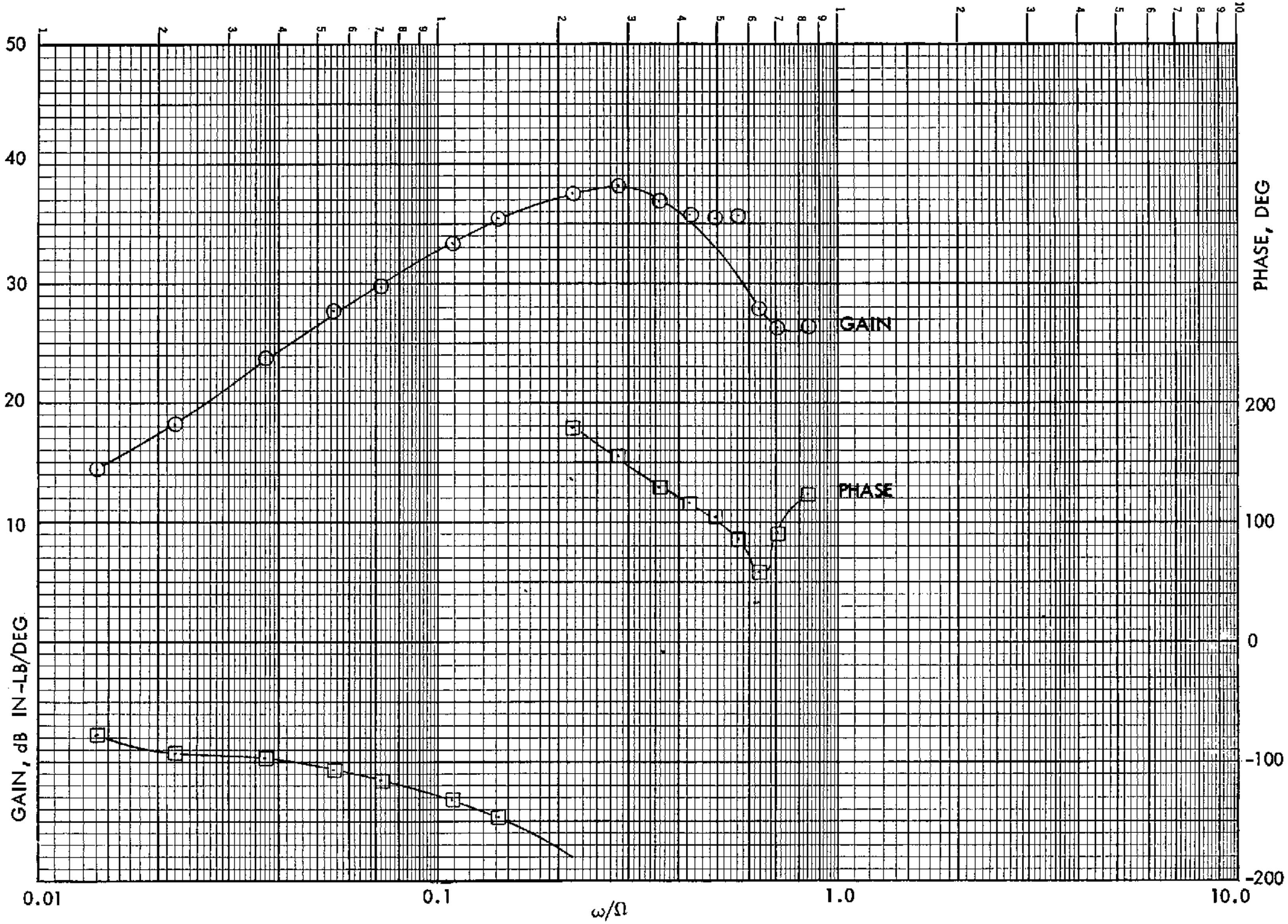

Figure B-79. Configuration 5, Hub Pitch Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0.26$, $\theta_o = 12^o$.

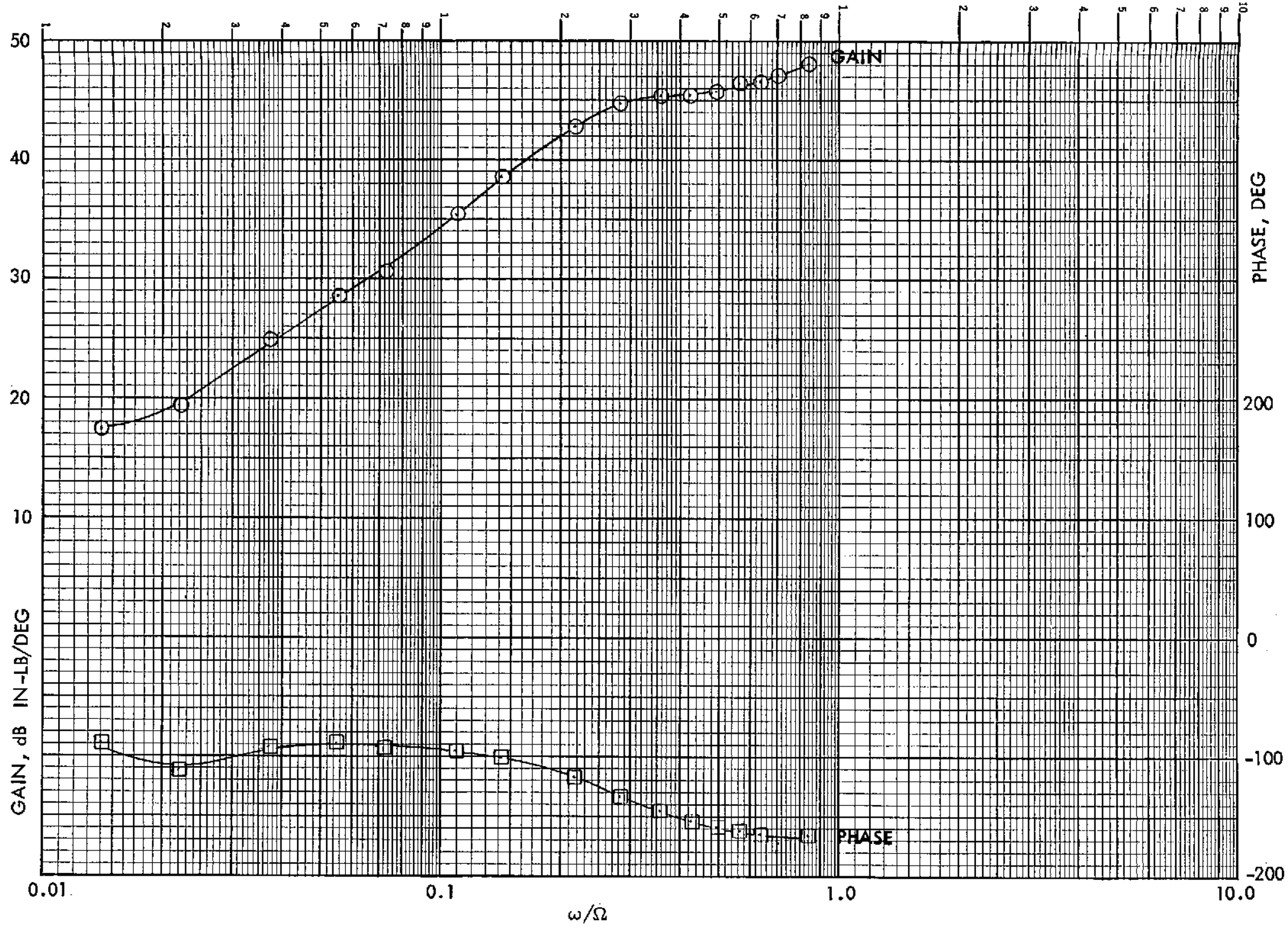

Figure B-80. Configuration 5, Hub Roll Moment Frequency Response to Shaft Roll. 850 RPM, $\mu = 0.26$, $\theta_o = 12^o$.

APPENDIX C

HINGELESS ROTOR VIBRATION REDUCTION BY OSCILLATORY COLLECTIVE AND CYCLIC CONTROL APPLICATIONS

Summary

This appendix deals with the concept of vibration reduction by periodic variations of the primary controls. More specifically, it deals with the elimination of the 4P pitch, roll, and vertical vibration by 4P variations of collective and cyclic pitch. The investigations are based on experimental response data. As the tests were part of and added on to a larger hingeless rotor research program, the tunnel time available was rather limited, and only a few operating conditions with essentially zero tip path plane tilt were investigated. Some of them do not represent realistic flight conditions.

The following subjects are treated:

- Extraction of gain and lag characteristics.
- Calculation of control inputs required.
- Effect of vibration reduction on blade loads.

Altogether, five different trimmed operating conditions are investigated. They cover the advance ratio range from approximately $\mu = 0.2$ to $\mu = 0.85$. Generally speaking, the control inputs required for vibration elimination are smaller or of about the same magnitude as those used for the frequency-response tests. The resulting pitch chanbes vary from approximately 0.2 to 3 degrees.

With the exception of the $\mu = 0.851$ case, for which the results are somewhat in doubt (the response tests to lateral cyclic pitch oscillations were run with a 0.3-degree different collective pitch than the reference nonoscillating case), the control inputs required for vibration reduction drastically

reduce the 3 and 5P and have only a minor effect on the 2P flexure flap bending moments. On the other hand, chord bending moments and blade torsion generally increase.

Evaluation of the test data revealed two types of shortcomings which should be avoided in future tests. First, the data given are based on a single test and have not been verified. Secondly, in some cases, the base-line and frequency-response tests were not run successively. In these cases, the steady-state collective and/or cyclic pitch used in both tests deviated slightly, resulting in an error of the calculated K- and τ-values. Numerical checks conducted for $\mu = 0.239$ indicate that the errors introduced are smaller than eight percent for K and less than ten degrees for τ. In spite of these shortcomings, it is believed that the results obtained accurately predict the general trends and that conclusions reached are valid.

From the limited data available, it appears that the approach is promising, especially for the low and medium advance ratio range. At the higher advance ratio ($\mu \sim 0.8$), the control inputs required for vibration reduction became larger. Further studies and tests covering both trimmed and partially trimmed flight conditions are suggested. The theoretical studies refer to the prediction of the rotor response characteristics; i.e., of the 18 gains and lag angles involved. The experiments would be an extension of the previous tests where attempts should be made to actually reduce the vibrations.

SYMBOLS

A, B	quantities describing cos 4ψ and sin 4ψ components of actuator input for frequency response tests, volt, see Table C-II and Equation (1)
C, D	quantities describing responses to A and B, in.-lb and lb, respectively, see Equation (1)
E, F, G, H	blade loads due to unit actuator input, in.-lb/ volt, see Equation (13)
$K_1 \ldots K_{18}$	gains of rotor response, see Table C-I
m	calculated flapbending moment at 3.3 in., in.-lb, $m = m_o + \Sigma m_{ns} \sin n\psi + \Sigma m_{nc} \cos n\psi$
M, L, T	4P vibratory pitching moments, rolling moments and thrust variations, in.-lb and lb, respectively; subscript e denotes existing vibrations to be compensated, subscript control describes effects of oscillatory control inputs. $M_e = M_s \sin 4\psi + M_c \cos 4\psi$; $L_e = L_s \sin 4\psi + L_c \cos 4\psi$; $T_e = T_s \sin 4\psi + T_c \cos 4\psi$
$\Theta_{nominal}$	nominal collective pitch, degrees
$\Theta_o, \Theta_s, \Theta_c$	oscillator inputs for collective, longitudinal and lateral cyclic pitch, volt $\Theta_o = \Theta_{os} \sin 4\psi + \Theta_{oc} \cos 4\psi$; $\Theta_s = \Theta_{ss} \sin 4\psi + \Theta_{sc} \cos 4\psi$; $\Theta_c = \Theta_{cs} \sin 4\psi + \Theta_{cc} \cos 4\psi$
$\tau_1 \ldots \tau_{18}$	lag angles of response, degrees, see Table C-I

Ω rotor angular velocity, sec^{-1}

ψ azimuth position of master blade, rad

"Compensating Control Inputs" define those which reduce the existing 4P pitching moments, rolling moments and vertical forces of a given flight condition to zero.

INTRODUCTION

The report deals with the vibration reduction of a four-bladed rotor by oscillatory control inputs* with the frequency 4Ω. As a distinction must be made between control applications in phase with sin 4ψ and cos 4ψ, there are six control quantities available, i.e., Θ_{os}, Θ_{oc}, Θ_{ss}, Θ_{sc}, Θ_{cs} and Θ_{cc}, to monitor the pitching moments, rolling moments and vertical forces. This means the dynamic system investigated, which consists of rotor, control mechanism and oscillators used, is characterized by 18 gains K_p and lag angles τ_p. The subscripts p (p = 1 through 18) are defined by Table I.

TABLE C-I

GAINS AND LAG ANGLES OF RESPONSE TO OSCILLATORY CONTROL APPLICATIONS

	Θ_{os}	Θ_{oc}	Θ_{ss}	Θ_{sc}	Θ_{cs}	Θ_{cc}
M	$K_1\tau_1$	$K_2\tau_2$	$K_3\tau_3$	$K_4\tau_4$	$K_5\tau_5$	$K_6\tau_6$
L	$K_7\tau_7$	$K_8\tau_8$	$K_9\tau_9$	$K_{10}\tau_{10}$	$K_{11}\tau_{11}$	$K_{12}\tau_{12}$
T	$K_{13}\tau_{13}$	$K_{14}\tau_{14}$	$K_{15}\tau_{15}$	$K_{16}\tau_{16}$	$K_{17}\tau_{17}$	$K_{18}\tau_{18}$

As indicated, K_3 is defined as the amplitude ratio M/Θ_{ss} and τ_3 is the lag angle of M with respect to Θ_{ss}. For convenience, the dimensions used are identical with those of the computer output, i.e., oscillator voltage for input, in - lb for M and L, lb for the thrust variation T. This means the dimensions of K_p are

*After completion of the program the author learned that the concept investigated is not new and has been previously suggested for a three-bladed rotor. See Reference 4 which is a broad feasibility study on this subject.

K_1 through K_{12} in.-lb/volt

K_{13} through K_{18} lb/volt

The phase angles τ_p are given in degrees, τ_p is positive if the response lags.

Although the investigations deal exclusively with 4P control variations, some general remarks may be in order. The general case involves sinusoidal collective and cyclic control variations with the frequency $n\Omega$ where n can be any positive number.

If n is an integer, the rotor excitations repeat themselves after each rotor revolution which means that the responses of each revolution are identical. This is true for any number of rotor blades but does not necessarily mean that all blades execute identical flapping motions. The latter is true only if n equals the number of rotor blades or is a multiple of the blade number. Only for these cases does a truly time independent response with invariable amplitude ratios K and lag angles τ exist.

CALCULATION OF GAINS AND LAG ANGLES

As for all response tests conducted, the oscillator input contained both sin 4ψ and cos 4ψ-components, always two amplitude ratios K and two lag angles τ are involved. Therefore, each time a set of two tests has to be evaluated. According to Table C-II, the input is characterized by the quantities A_1 B_1 A_2 B_2 and the response by C_1 D_1 C_2 D_2.

If the rotor responds to cos 4ψ-excitations with the gain K_j and the lag angle τ_j (j = even number) and to sin 4ψ-excitations with K_i and τ_i (i = odd number), in- and output are related by the equations

$$\left.\begin{aligned} A_1 K_j \cos(4\psi - \tau_j) + B_1 K_i \sin(4\psi - \tau_i) &= C_1 \cos 4\psi + D_1 \sin 4\psi \\ A_2 K_j \cos(4\psi - \tau_j) + B_2 K_i \sin(4\psi - \tau_i) &= C_2 \cos 4\psi + D_2 \sin 4\psi \end{aligned}\right\} \quad (1)$$

TABLE C-II

INPUT AND OUTPUT NOTATIONS

Test	Input	Response
#1	$A_1 \cos 4\psi + B_1 \sin 4\psi$	$C_1 \cos 4\psi + D_1 \sin 4\psi$
#2	$A_2 \cos 4\psi + B_2 \sin 4\psi$	$C_2 \cos 4\psi + D_2 \sin 4\psi$

In order to calculate the unknowns K_i K_j τ_i and τ_j, a component analysis is used. The gains K_i K_j are expressed as

$$\left.\begin{aligned} K_i &= \left(R_i^2 + I_i^2\right)^{1/2} \\ K_j &= \left(R_j^2 + I_j^2\right)^{1/2} \end{aligned}\right\} \qquad (2)$$

Figure 1 shows the oscillatory pitching moments due to combined θ_{ss} and θ_{sc} control applications. The moments generated are presented by rotating vectors where cos 4ψ is positive to the right and sin 4ψ positive down. This means, that the vector positions shown refer to $\psi = 0$. By definition, the quantities $R_{i,j}$ characterize the responses in phase with the excitation and $I_{i,j}$ those out of phase. The latter are positive if the response leads. As indicated, there are altogether four responses involved which are combined to the resultant M.

Inserting Equation (2) into Equation (1) leads to

$$\left.\begin{aligned} R_i &= \frac{A_1D_2 - A_2D_1}{A_1B_2 - A_2B_1} \\ I_i &= \frac{A_1C_2 - A_2C_1}{A_1B_2 - A_2B_1} \\ \tan \bar{\tau}_i &= \left|I_i/R_i\right| \quad 0 < \bar{\tau}_i < \pi/2 \end{aligned}\right\} \qquad (3)$$

and

$$
\left.
\begin{aligned}
R_j &= \frac{C_1B_2 - B_1C_2}{A_1B_2 - A_2B_1} \\[2ex]
I_j &= \frac{B_1D_2 - B_2D_1}{A_1B_2 - A_2B_1} \\[2ex]
\tan \bar{\tau}_j &= |I_j/R_j| \quad 0 < \bar{\tau}_j < \pi/2
\end{aligned}
\right\} \qquad (4)
$$

In both cases

$$
\begin{aligned}
\tau &= +\bar{\tau} && \text{for } R > 0 && I < 0 \\
&= -\bar{\tau} && R > 0 && I > 0 \\
&= \pi + \bar{\tau} && R < 0 && I > 0 \\
&= \pi - \bar{\tau} && R < 0 && I < 0
\end{aligned}
$$

Check of Calculated K_i K_j τ_i and τ_j-Values

If so desired, Equation (1) can be used to check the calculated values of K_i K_j τ_i and τ_j. Splitting up these equations into sin 4ψ- and cos 4ψ-components leads to the following four expressions which must be satisfied

$$
\left.
\begin{aligned}
A_1 K_j \cos \tau_j - B_1 K_i \sin \tau_i &= C_1 \\[1ex]
A_1 K_j \sin \tau_j + B_1 K_i \cos \tau_i &= D_1 \\[1ex]
A_2 K_j \cos \tau_j - B_2 K_i \sin \tau_i &= C_2 \\[1ex]
A_2 K_j \sin \tau_j + B_2 K_i \cos \tau_i &= D_2
\end{aligned}
\right\} \qquad (5)
$$

OSCILLATORY CONTROL INPUTS REQUIRED

The six oscillator inputs available have to be selected such that their responses satisfy the requirements, whatever they may be. By definition, the vibratory control inputs result in the following pitching moments, rolling moments and vertical forces ($n = 4$):

$$
\begin{aligned}
M_{control} = &+ \Theta_{os} K_1 \sin(n\psi - \tau_1) + \Theta_{oc} K_2 \cos(n\psi - \tau_2) \\
&+ \Theta_{ss} K_3 \sin(n\psi - \tau_3) + \Theta_{sc} K_4 \cos(n\psi - \tau_4) \\
&+ \Theta_{cs} K_5 \sin(n\psi - \tau_5) + \Theta_{cc} K_6 \cos(n\psi - \tau_6)
\end{aligned} \tag{6}
$$

$$
\begin{aligned}
L_{control} = &+ \Theta_{os} K_7 \sin(n\psi - \tau_7) + \Theta_{oc} K_8 \cos(n\psi - \tau_8) \\
&+ \Theta_{ss} K_9 \sin(n\psi - \tau_9) + \Theta_{sc} K_{10} \cos(n\psi - \tau_{10}) \\
&+ \Theta_{cs} K_{11} \sin(n\psi - \tau_{11}) + \Theta_{cc} K_{12} \cos(n\psi - \tau_{12})
\end{aligned} \tag{7}
$$

$$
\begin{aligned}
T_{control} = &+ \Theta_{os} K_{13} \sin(n\psi - \tau_{13}) + \Theta_{oc} K_{14} \cos(n\psi - \tau_{14}) \\
&+ \Theta_{ss} K_{15} \sin(n\psi - \tau_{15}) + \Theta_{sc} K_{16} \cos(n\psi - \tau_{16}) \\
&+ \Theta_{cs} K_{17} \sin(n\psi - \tau_{17}) + \Theta_{cc} K_{18} \cos(n\psi - \tau_{18})
\end{aligned} \tag{8}
$$

To reduce the existing vibrations, the moments and forces generated must counteract M_e, L_e and T_e, i.e.,

$$\left.\begin{aligned} M_{control} &= -M_s \sin 4\psi - M_c \cos 4\psi \\ L_{control} &= -L_s \sin 4\psi - L_c \cos 4\psi \\ T_{control} &= -T_s \sin 4\psi - T_c \cos 4\psi \end{aligned}\right\} \qquad (9)$$

Equations 6 through 10 lead to the following six linear equations for the unknowns Θ_{os}, Θ_{oc}, Θ_{ss}, Θ_{sc}, Θ_{cs} and Θ_{cc}.

$$\begin{bmatrix} +K_1 \cos \tau_1 & +K_2 \sin \tau_2 & +K_3 \cos \tau_3 & +K_4 \sin \tau_4 & +K_5 \cos \tau_5 & +K_6 \sin \tau_6 \\ -K_1 \sin \tau_1 & +K_2 \cos \tau_2 & -K_3 \sin \tau_3 & +K_4 \cos \tau_4 & -K_5 \sin \tau_5 & +K_6 \cos \tau_6 \\ +K_7 \cos \tau_7 & +K_8 \sin \tau_8 & +K_9 \cos \tau_9 & +K_{10} \sin \tau_{10} & +K_{11} \cos \tau_{11} & +K_{12} \sin \tau_{12} \\ -K_7 \sin \tau_7 & +K_8 \cos \tau_8 & -K_9 \sin \tau_9 & +K_{10} \cos \tau_{10} & -K_{11} \sin \tau_{11} & +K_{12} \cos \tau_{12} \\ +K_{13} \cos \tau_{13} & +K_{14} \sin \tau_{14} & +K_{15} \cos \tau_{15} & +K_{16} \sin \tau_{16} & +K_{17} \cos \tau_{17} & +K_{18} \sin \tau_{18} \\ -K_{13} \sin \tau_{13} & +K_{14} \cos \tau_{14} & -K_{15} \sin \tau_{15} & +K_{16} \cos \tau_{16} & -K_{17} \sin \tau_{17} & +K_{18} \cos \tau_{18} \end{bmatrix} \begin{bmatrix} \Theta_{os} \\ \Theta_{oc} \\ \Theta_{ss} \\ \Theta_{sc} \\ \Theta_{cs} \\ \Theta_{cc} \end{bmatrix} = \begin{bmatrix} -M_s \\ -M_c \\ -L_s \\ -L_c \\ -T_s \\ -T_c \end{bmatrix} \qquad (10)$$

EFFECT ON BLADE LOADS

The objective of the following investigations is to determine the effect of the compensating control input on the blade loads, i.e., on

- flapbending at 3.3 in.
- flapbending at 13.15 in.
- chordbending at 2.4 in.
- torsion at 9.28 in.

In all cases the 2 to 5P content of the loads is of interest. The first task is to determine, from the response tests, the contribution of each of the six possible 4P control inputs to these loads. Again, two sets of data are required. The vibratory control applications used and the resulting n^{th} harmonic of the load considered are written as follows:

$$\begin{array}{lll} & \underline{\text{Input (volt)}} & \underline{\text{Resulting Load (in.-lb)}} \\ \text{Test \#1} & A_1 \cos 4\psi + B_1 \sin 4\psi & C_{n1} \cos n\psi + D_{n1} \sin n\psi \\ \text{Test \#2} & A_2 \cos 4\psi + B_2 \sin 4\psi & C_{n2} \cos n\psi + D_{n2} \sin n\psi \end{array} \Bigg\} \quad (11)$$

If nonlinear effects are excluded, the n per rev load variation due to unit control application in phase with

$$\begin{array}{lll} \text{(a)} \quad \cos 4\psi & \text{amounts to} & (E_n \cos n\psi + F_n \sin n\psi) \\ \text{(b)} \quad \sin 4\psi & & (G_n \cos n\psi + H_n \sin n\psi) \end{array} \Bigg\} \quad (12)$$

In these expressions

$$\left.\begin{aligned}
E_n &= \frac{B_2C_{n1} - B_1C_{n2}}{A_1B_2 - A_2B_1} \\[2ex]
F_n &= \frac{B_2D_{n1} - B_1D_{n2}}{A_1B_2 - A_2B_1} \\[2ex]
G_n &= \frac{A_1C_{n2} - A_2C_{n1}}{A_1B_2 - A_2B_1} \\[2ex]
H_n &= \frac{A_1D_{n2} - A_2D_{n1}}{A_1B_2 - A_2B_1}
\end{aligned}\right\} \tag{13}$$

If $\Theta_{\xi s}$, $\Theta_{\xi c}$ (ξ = o, s, c) denote the vibratory control inputs used, the increments of the n^{th} harmonic of the load considered are

$$\begin{aligned}
(\Delta \text{ load})_n &= (\Theta_{\xi c} E_n + \Theta_{\xi s} G_n) \cos n\psi \\
&\quad + (\Theta_{\xi c} F_n + \Theta_{\xi s} H_n) \sin n\psi
\end{aligned} \tag{14}$$

NUMERICAL INVESTIGATIONS

General

The methods outlined in the previous sections are applied to the following five operating conditions for which test data were available

TABLE C-III. OPERATING CONDITIONS INVESTIGATED

μ	$\theta_{nominal}$	α	C_T/σ
0.191	12°	-5°	0.102
0.239	4	-5	0.028
0.443	4	-5	0.011
0.849	10	-5	-0.005
0.851	4	-5	-0.013

In all cases the shaft angle of attack is $\alpha = -5°$ and the rotor is trimmed so that essentially $a_1 = b_1 = 0$. As can be seen, the tests cover the advance ratio range from approximately $\mu = 0.2$ to $\mu = 0.85$. The case $\mu = 0.191$ is characterised by $\theta_{nominal} = 12°$ and $C_T/\sigma = 0.102$, the latter figure indicates a relatively high specific loading. In contrast, at the advance ratios $\mu = 0.849$ and 0.851 the rotor is practically unloaded, i.e., no steady lifting force is generated. The 4P-vibrations associated with the various test conditions are listed in Table C-IV. The moments are given in in.-lb and the vibratory forces in lb.

It should be noted that there was no instrumentation to measure the vibratory pitching and rolling moments. These moments were obtained by properly adding up the flapbending moments of the four blades at 3.3 in. which were measured separately. This means, the effects of the in-plane forces, vertical shear forces and blade torsion have been ignored.

TABLE C-IV. VIBRATORY MOMENTS AND FORCES TO BE COMPENSATED

μ	0.191	0.239	0.443	0.849	0.851
M_s	0.3805	-1.7207	2.6149	20.0483	3.5349
M_c	-0.5301	-0.4113	-0.5208	-4.5724	-8.4341
L_s	12.2080	1.3725	-6.7626	9.4647	-10.5154
L_c	2.2180	-1.9145	-3.7399	-31.1214	-17.2626
T_s	0.1979	-0.1089	0.0304	1.9247	0.8838
T_c	-0.2013	-0.0865	0.0556	-0.0048	-0.8626

Gains and Lag Angles

The rotor response characteristics were calculated by applying equations (2, 3, 4) to the test data available. The results obtained are listed in Table C-V. As pointed out previously, the values given include the effect of the actuator used, and no effort was made to compare the experiments with theory. Nevertheless, some general statements can be made. It is obvious that for $\mu = 0$, the gain and lag angle of the responses to sin 4ψ- and cos 4ψ-type control applications must be the same. For $\mu \neq 0$ this is no longer true, and one would expect that the spread between K_iK_j and $\tau_i\tau_j$ (see equations (3), (4)) widens with increasing advance ratio. Further, according to classical rotor theory which neglects blade stall, the nominal collective pitch setting has no effect on the frequency response characteristics.

Generally speaking, the K_iK_j and $\tau_i\tau_j$ values of Table C-V differ not very much. It appears, however, that at higher advance ratios (compare columns for $\mu = 0.849$ and 0.851) the collective pitch has a larger effect than anticipated. It is also possible that the error of the baseline data described in the Critique section may play a role.

Oscillator Inputs Required

Equation (10) was used to calculate the inputs required to

(a) generate unit amplitudes of pure pitching moments, rolling moments and vertical forces and

(b) compensate the existing vibrations

The results are given in Tables C-VI and C-VII. Inspection of these tables shows that, as to be expected, the oscillatory inputs required for vibration reductions generally increase with increasing advance ratio. Surprisingly, the rotor collective pitch setting seems to play a larger role than the steady lift generated. See also Table C-VIII which summarizes the results obtained and lists the operating conditions investigated in the order of decreasing vibrations. The first column shows the relative magnitude of the vibratory moments generated and the last column the approximate amplitude of the blade pitch variation required to compensate the vibrations. The amplitude of the pitch variation produced per volt oscillator input changes with the control loads and the type of control (θ_o, θ_s, θ_c) used. Therefore, the conversion factor varies and the last column of Table C-VIII is given only to indicate the approximate amplitudes involved.

With one exception, the vibratory control applications required are smaller than those used for the frequency response tests. The exception is the case with the highest vibration level encountered for which the compensating controls required are approximately 15 to 20% higher than the inputs used for the 4P frequency response tests. It should be kept in mind, however, that this operating condition is somewhat unrealistic in that at $\mu = 0.849$ an unloaded rotor will normally not be operated with 10° collective pitch.

Blade Loads

The calculation of the effect of the compensating control inputs on the blade loads is based on equations (13) and (14) and the figures listed in Table C-VII. The first step is to calculate, for each specific case, the

quantities E_n through H_n (n = 2, 3, 4, 5). See Tables C-IX and C-X which refer to μ = 0.191 and μ = 0.849, respectively. They list the sin nψ- and cos nψ-components of the various loads due to unit control application. The tables show, for instance, that at the advance ratio μ = 0.191, a $\pm$1 volt variation of $_{ss}$ produces 3P chordwise bending moments of the magni-magnitude

$$(-89.576 \sin 3\psi + 38.1540 \cos 3\psi) \text{ in-lb}$$

As the control inputs required for vibration reduction have been previously calculated, see Table C-VII, their effects on the blade loads can be determined by adding up the various contributions. The reader is referred to Table C-XI which applies to the flapbending moment at 3.3 in. for the case μ = 0.849. Given are the original loads without vibratory control application, the individual contributions and the sum. The last column shows the amplitudes without and with compensating control input. A summary of the loads is represented in Table C-XII. Generally speaking, chordbending, blade torsion and the 4P flapbending moments of the root flexure increase with increasing advance ratio. The 3 and 5P flapbending moments of the flexure are, by nature, reduced and the 2P flapbending moments are least affected. From the limited data available, it appears that the 4P chordwise- and 5P torsion moments may be the critical loads.

As mentioned previously, for simplicity it was assumed that the pitching and rolling moments are solely caused by the flapbending moment of the root flexure which were individually measured and properly combined by a sin-cos-potentiometer. This means, the only source for the troublesome 4P moments in the nonrotating system are the 3 and 5P flapbending moments at 3.3 in. For four identical blades it follows that elimination of the 4P pitching and rolling moments requires that the sin 3ψ-, cos 3ψ-, sin 5ψ- and cos 5ψ-components of the flapbending moments at 3.3 in. are reduced to zero. As the four blades behave differently, this ideal condition will practically never be fulfilled.

In the preceding paragraphs the flapbending moment of a specific blade with consideration of the compensating control input has been calculated. To a certain extent, these predicted loads can be used as an independent check. As an example, the case $\mu = 0.849$ is treated. According to Table C-IV the amplitudes of the 4P pitching and rolling moments to be compensated are

$$\begin{aligned} M &= 20.56 \text{ in-lb} \\ L &= 32.52 \text{ in-lb} \end{aligned} \qquad (15)$$

The calculated 3 and 5P flapbending moments with consideration of the compensating control input amount to (see Table C-XI),

$$\begin{aligned} m_{3s} &= 0.6233 \text{ in-lb} \\ m_{3c} &= -1.1833 \\ m_{5s} &= -1.9266 \\ m_{5c} &= 0.3099 \end{aligned} \qquad (16)$$

The amplitudes of the resulting 4P pitching and rolling moments are

$$\begin{aligned} M &= 3.14 \text{ in-lb} \\ L &= 5.91 \text{ in-lb} \end{aligned} \qquad (17)$$

Comparison of equations (15) and (17) shows that the vibratory pitching moment is reduced to approximately 15% and the rolling moment to approximately 18% of its original value. This indicates that the various blades behave differently and that the goal of zero 4P pitch-roll and vertical vibrations is achieved by cancellation of the effects of the four blades.

EXPLORATORY INVESTIGATIONS ON THE ORIGIN OF THE 3P AND 5P VIBRATIONS

For the lowest advance ratio investigated, i.e., for the operating condition*

$$\left.\begin{aligned} \mu &= 0.191 \\ \theta_o &= 12^\circ \\ \theta_s &= -6.7^\circ \\ \theta_c &= 4.2^\circ \\ \alpha &= -5^\circ \end{aligned}\right\} \qquad (18)$$

without oscillatory control input, numerical studies have been conducted to determine whether the amplitudes of the 3P and 5P flapbending moments at 3.3 inches can be predicted without elaborate wake calculations. The case under consideration has a relatively high 5P vibration level. As the classical rotor theory with uniform induced flow gives, for low advance ratios, no appreciable 5P flapping excitations, the consideration of nonuniform induced flow becomes mandatory. The induced flow data used for the present investigation are based on a combined momentum and blade element lift theory which was developed under a Lockheed-sponsored research program. It is based on a loaded disc, i.e., on an infinite number of blades, and was originally devised for performance and control investigations at low advance ratios. The theory has been successfully applied to control studies, but its use for vibration investigations is new and unproven.

In principle, the theory follows the air masses as they travel across the rotor disc. At each point of the disc the change in the induced flow is calculated, taking into account both the original loading and the reduction of this loading by the induced flow. A computer program developed gives for the

*The quantities θ_o, θ_s, θ_c denote here the conventional collective and cyclic pitch.

various aerodynamic loads, such as those due to angle of attack, collective or cyclic pitch, a closed form solution for the induced flow. The program calculates the flapping moments generated by the induced flow and the work done on mode shapes for flapbending. The results are Fourier-analyzed (see Reference 5).

The reader is referred to Figures C-2 and C-3 which show the induced flow due to collective pitch, longitudinal and lateral cyclic pitch, and shaft angle-of-attack for μ = .191. Figure C-2 gives the fore-aft distribution at the rotor center (ψ = 0, 180°), and Figure C-3 gives the lateral distribution at the center (ψ = 90, 270°). The graphs shown present the inflow ratio λ due to the induced flow; λ is positive up. All data presented refer to unit radian angles.

Using an existing computer program*, which takes into account the basic loading of the operating condition investigated and the effects of the non-uniform induced flow, the vibratory flap-bending moments at 3.3 inches have been calculated. The theory, which takes into account two flap-bending modes and uses steady-state aerodynamics, predicts fairly well the amplitude of the 5P moment (measured value ±3.5 in-lb, calculated value ±4.7 in-lb), but grossly overestimates the 3P moment (measured value ±4.4 in-lb, calculated value ±27 in-lb). Part of the difference may be explained by looseness in the control system. The following pitch variations in the rotating system were measured:

2P	+0.07°
3P	±0.15
4P	±0.03
5P	±0.02

However, this effect is probably not large enough to account for the discrepancy. It appears, therefore, that the theory used exaggerates the 3P excitations of the induced flow.

*The author gratefully acknowledges the assistance of R. E. Donham who developed the program used and conducted the numerical investigations.

TABLE C-V

GAINS AND LAG ANGLES DERIVED FROM EXPERIMENTS

p	μ = 0.191		μ = 0.239		μ = 0.443		μ = 0.849		μ = 0.851	
	K_p	τ_p	K_p	τ_p	K_p	τ_p	K_p	τ_p	K_p	τ_p
1	5.617	42.3	1.099	125.6	2.236	120.5	4.798	72.0	4.094	116.5
2	6.126	44.0	1.141	149.1	2.791	129.3	4.787	72.6	3.487	135.6
3	17.571	-9.6	52.416	-30.1	42.237	-28.7	18.537	-19.8	43.319	-5.1
4	26.019	-45.4	47.991	-37.3	40.073	-30.1	20.329	-41.5	37.081	12.7
5	30.696	155.7	59.416	182.9	45.186	188.4	33.002	183.4	26.170	214.2
6	32.505	181.7	77.408	193.2	61.144	180.8	21.085	180.0	38.661	184.5
7	2.856	136.0	4.246	81.9	8.166	86.5	2.472	102.1	10.097	93.1
8	1.507	98.4	5.083	67.1	8.077	66.9	3.412	144.7	7.979	62.9
9	35.384	213.4	59.420	198.8	43.846	181.4	44.506	200.5	48.081	176.2
10	41.674	185.8	51.280	198.6	39.383	195.7	48.473	201.0	40.850	187.7
11	45.953	116.6	76.875	108.3	78.512	101.8	67.268	134.4	88.540	94.7
12	61.589	131.5	86.361	99.3	80.995	95.7	61.288	141.5	90.934	95.3
13	6.879	45.6	5.420	51.4	8.928	39.2	8.188	35.8	9.340	38.5
14	7.211	43.7	6.195	46.4	8.999	35.9	8.906	36.1	9.651	35.6
15	6.635	245.2	4.275	205.9	2.571	195.2	5.976	215.0	3.623	184.0
16	6.033	218.3	3.962	208.1	3.123	188.7	4.775	229.5	1.977	185.4
17	13.000	127.3	7.596	94.3	7.632	76.7	13.261	133.1	11.188	86.9
18	10.057	128.6	8.176	97.4	8.381	92.2	7.953	126.3	11.101	90.7

TABLE C-VI

OSCILLATOR INPUTS REQUIRED (VOLT) TO GENERATE PURE sin 4ψ- AND cos 4ψ- COMPONENTS OF PITCHING MOMENTS, ROLLING MOMENTS AND VERTICAL FORCES

μ	$M_{control}$	θ_{os}	θ_{oc}	θ_{ss}	θ_{sc}	θ_{cs}	θ_{cc}
0.191	$M_{s,\ control} = 1$	+0.0143	-0.0485	+0.0508	+0.0290	-0.0296	+0.0241
	$M_{c,\ control} = 1$	+0.0117	-0.0123	-0.0055	+0.0283	-0.0219	-0.0098
	$L_{s,\ control} = 1$	-0.0177	-0.0236	-0.0113	+0.0052	-0.0169	+0.0073
	$L_{c,\ control} = 1$	+0.0042	-0.0071	-0.0209	-0.0200	+0.0003	-0.0147
	$T_{s,\ control} = 1$	+0.0922	+0.1380	-0.0490	-0.0302	+0.0252	-0.0232
	$T_{c,\ control} = 1$	-0.1044	+0.1164	+0.0123	-0.0210	+0.0235	+0.0081
0.239	$M_{s,\ control} = 1$	+0.0028	-0.0069	+0.0299	+0.0219	-0.0111	+0.0211
	$M_{c,\ control} = 1$	+0.0109	+0.0028	-0.0096	+0.0206	-0.0154	-0.0070
	$L_{s,\ control} = 1$	-0.0023	-0.0108	-0.0056	+0.0203	-0.0167	+0.0078
	$L_{c,\ control} = 1$	+0.0128	-0.0029	-0.0245	-0.0243	-0.0008	-0.0210
	$T_{s,\ control} = 1$	+0.1356	+0.1337	-0.0053	-0.0155	+0.0072	-0.0128
	$T_{c,\ control} = 1$	-0.1436	+0.1085	+0.0168	+0.0070	+0.0091	+0.0100
0.443	$M_{s,\ control} = 1$	-0.0019	-0.0053	+0.0255	+0.0116	-0.0069	+0.0145
	$M_{c,\ control} = 1$	+0.0053	+0.0011	-0.0023	+0.0331	-0.0168	-0.0004
	$L_{s,\ control} = 1$	-0.0057	-0.0067	-0.0021	+0.0253	-0.0135	+0.0126
	$L_{c,\ control} = 1$	+0.0120	-0.0028	-0.0155	-0.0084	-0.0093	-0.0112
	$T_{s,\ control} = 1$	+0.1020	+0.0732	-0.0088	-0.0094	-0.0018	-0.0138
	$T_{c,\ control} = 1$	-0.0714	+0.0941	+0.0071	-0.0108	+0.0171	-0.0024

TABLE C-VI

OSCILLATOR INPUTS REQUIRED (VOLT) TO GENERATE PURE sin 4ψ- AND cos 4ψ- COMPONENTS OF PITCHING MOMENTS, ROLLING MOMENTS AND VERTICAL FORCES (Continued)

μ	$M_{control}$	θ_{os}	θ_{oc}	θ_{ss}	θ_{sc}	θ_{cs}	θ_{cc}
0.849	$M_{s,\ control} = 1$	+0.0049	-0.0240	+0.0338	+0.0179	-0.0229	+0.0182
	$M_{c,\ control} = 1$	+0.0149	-0.0149	-0.0109	+0.0487	-0.0271	-0.0222
	$L_{s,\ control} = 1$	-0.0124	-0.0137	-0.0120	+0.0074	-0.0118	+0.0024
	$L_{c,\ control} = 1$	+0.0052	-0.0056	-0.0072	-0.0121	+0.0006	-0.0123
	$T_{s,\ control} = 1$	+0.1050	+0.0698	-0.0211	+0.0037	+0.0017	-0.0214
	$T_{c,\ control} = 1$	-0.0772	+0.1079	-0.0034	-0.0305	+0.0221	+0.0031
0.851	$M_{s,\ control} = 1$	+0.0001	-0.0081	+0.0191	+0.0122	-0.0077	+0.0109
	$M_{c,\ control} = 1$	+0.0082	-0.0055	-0.0126	+0.0290	-0.0135	-0.0055
	$L_{s,\ control} = 1$	-0.0080	-0.0107	-0.0043	+0.0117	-0.0057	+0.0098
	$L_{c,\ control} = 1$	+0.0113	-0.0102	-0.0069	+0.0028	-0.0137	-0.0037
	$T_{s,\ control} = 1$	+0.1016	+0.0599	-0.0087	+0.0109	-0.0130	-0.0091
	$T_{c,\ control} = 1$	-0.0682	+0.0998	+0.0034	-0.0143	+0.0189	-0.0058

TABLE C-VII

OSCILLATOR INPUT REQUIRED (VOLT) TO COMPENSATE EXISTING 4P- VIBRATIONS

μ	0.191	0.239	0.443	0.849	0.851
θ_{os}	0.1683	0.0394	0.0146	0.0457	0.0300
θ_{oc}	0.3121	0.0224	-0.0490	0.2354	-0.2726
θ_{ss}	0.1746	0.0090	-0.1400	-0.7980	-0.3275
θ_{sc}	-0.0133	-0.0293	0.1273	-0.5881	0.3498
θ_{cs}	0.2052	-0.0026	-0.1176	0.4610	-0.3549
θ_{cc}	-0.0651	-0.0180	0.0056	-0.8308	-0.0428

TABLE C-VIII

VIBRATION SUMMARY

Rel. Vibration Level	μ	$\theta_{nominal}$	C_T/σ	Ampl. of Pitch Variation
1	0.849	10°	-0.005	$\sim 3.0^{\circ}$,1.C
0.58	0.851	4	-0.013	2.0
0.32	0.191	12	0.102	0.8
0.21	0.443	4	0.011	0.5
0.08	0.239	4	0.028	0.2

Decreasing Vibration Level

TABLE C-IX

EFFECTS OF UNIT 4P OSCILLATOR INPUT ON BLADE BENDING AND TORSION MOMENTS (in-lb). $\mu = 0.191$

$\mu = 0.191$	Input	sin 2ψ	cos 2ψ	sin 3ψ	cos 3ψ	sin 4ψ	cos 4ψ	sin 5ψ	cos 5ψ
Flapbending 3.3 in.	θ_{os}	- 0.3732	0.9727	- 1.7330	2.8297	0.5884	1.3219	- 0.8755	- 0.0181
	θ_{oc}	0.6605	0.3153	- 1.6473	- 1.8176	- 1.5598	0.6031	- 0.4063	- 0.9808
	θ_{ss}	-10.6961	- 1.2822	2.0571	7.4429	4.0126	- 4.9230	-13.2025	- 8.4941
	θ_{sc}	1.9075	2.4495	- 7.1607	- 1.5046	3.6520	5.4705	16.2352	- 6.8083
	θ_{cs}	-14.1317	- 0.7444	- 4.0295	13.5666	4.8735	8.5207	21.5007	- 3.6205
	θ_{cc}	- 5.1742	- 6.4399	- 13.8885	- 2.1978	- 7.2511	2.4465	15.6010	21.0344
Flapbending 13.15 in.	θ_{os}	- 1.9186	- 0.4614	- 0.6867	- 6.5606	- 1.5001	- 4.8396	- 2.0445	- 2.6920
	θ_{oc}	1.6104	- 1.8246	7.2836	- 0.1708	5.7483	- 1.1691	3.5061	- 2.3027
	θ_{ss}	- 5.7613	2.9513	- 8.3289	9.3671	- 2.1708	7.5778	27.1720	20.4354
	θ_{sc}	- 2.7539	- 3.2486	- 1.2320	- 13.5790	- 7.8128	- 2.8441	-34.3703	11.9524
	θ_{cs}	- 9.4182	- 0.3077	- 10.4959	- 16.3593	-13.4772	-10.6060	-51.8562	4.4935
	θ_{cc}	0.6383	- 8.0975	22.2180	- 6.4321	9.1711	- 0.5946	-29.4691	-49.2371

TABLE C-IX

EFFECTS OF UNIT 4P OSCILLATOR INPUT ON BLADE BENDING AND TORSION MOMENTS (in-lb). μ = 0.191 (Continued)

μ = 0.191	Input	sin 2ψ	cos 2ψ	sin 3ψ	cos 3ψ	sin 4ψ	cos 4ψ	sin 5ψ	cos 5ψ
Chordbending 2.4 in.	θ_{os}	- 0.1722	1.5960	8.2350	- 58.3582	8.4551	4.7643	12.0548	4.7015
	θ_{oc}	- 0.5554	- 1.9287	61.6575	13.2018	- 0.9949	5.2212	- 7.0784	14.2534
	θ_{ss}	- 7.0075	11.5854	- 89.5760	38.1540	3.2585	8.1847	-63.4133	-38.7459
	θ_{sc}	9.9071	- 0.0388	25.2326	-130.9533	-25.2420	1.3678	71.9836	-45.2782
	θ_{cs}	-17.3833	20.4928	0.2991	-117.7886	- 4.6116	-13.9074	92.1914	-50.9290
	θ_{cc}	- 5.9458	-11.0118	155.9907	26.1001	37.5880	49.6477	91.3875	63.7195
Torsion 9.28 in.	θ_{os}	- 0.0854	0.0591	- 0.0999	- 0.2262	- 0.8905	0.2661	- 0.1276	- 0.2163
	θ_{oc}	0.1356	- 0.0977	0.2233	- 0.1390	- 0.2430	- 1.0266	0.3094	0.0139
	θ_{ss}	- 0.5359	0.3624	- 0.4745	- 1.5522	0.5805	0.5692	15.8582	6.5678
	θ_{sc}	- 0.1426	- 0.1260	1.1926	0.0700	- 1.3022	- 0.1040	-14.3401	11.1612
	θ_{cs}	- 0.7923	0.1791	- 2.1637	- 3.4956	- 1.1513	- 1.1340	-25.2376	12.7451
	θ_{cc}	0.0075	- 1.0066	3.3472	- 2.8017	- 0.6015	- 1.0076	-21.2855	-21.3175

TABLE C-X

EFFECTS OF UNIT 4P OSCILLATOR INPUT ON BLADE BENDING AND TORSION MOMENTS (in-lb). μ = 0.849

μ = 0.849	Input	sin 2ψ	cos 2ψ	sin 3ψ	cos 3ψ	sin 4ψ	cos 4ψ	sin 5ψ	cos 5ψ
Flapbending 3.3 in.	θ_{os}	0.3815	2.6028	- 1.1212	+ 1.9467	+ 0.0022	1.6252	- 0.4640	+ 0.2286
	θ_{oc}	- 0.7265	- 0.7428	- 2.1170	- 0.9082	- 1.7646	0.1744	+ 0.4336	- 0.2014
	θ_{ss}	-20.1796	- 7.1252	0.4843	10.9746	9.2290	- 1.4705	-12.1221	-16.4408
	θ_{sc}	1.4455	-18.6069	-11.8793	0.8771	1.9670	9.2946	+18.4710	-13.1116
	θ_{cs}	-15.0717	19.2091	- 1.7568	+ 13.3006	4.4390	13.0827	24.2022	-18.4700
	θ_{cc}	-11.0041	-12.5052	-12.2451	- 3.9250	-11.5818	6.8481	17.1269	+18.2863
Flapbending 13.15 in.	θ_{os}	- 3.1446	0.01156	+ 0.0644	- 6.4289	0.5673	- 5.5966	- 2.6912	- 5.2806
	θ_{oc}	0.4488	- 3.3139	+ 5.7587	- 0.6033	7.2213	1.7289	4.4109	- 1.9638
	θ_{ss}	-13.1131	- 1.6401	- 9.4439	11.4718	2.7493	1.6368	20.3552	30.4485
	θ_{sc}	- 3.1093	-10.4663	-13.7168	- 7.3647	- 0.7250	4.6008	-31.6355	23.4534
	θ_{cs}	-15.3541	3.9011	-20.8842	- 14.1583	- 4.0272	- 4.6816	-53.1766	36.9531
	θ_{cc}	- 3.7738	-10.2279	7.2742	- 11.8491	2.4534	1.0036	-30.9619	-33.3918

TABLE C-X

EFFECTS OF UNIT 4P OSCILLATOR INPUT ON BLADE BENDING AND TORSION MOMENTS (in-lb). μ = 0.849 (Continued)

μ = 0.849	Input	sin 2ψ	cos 2ψ	sin 3ψ	cos 3ψ	sin 4ψ	cos 4ψ	sin 5ψ	cos 5ψ
Chordbending 2.4 in.	θ_{os}	- 5.2318	5.1653	18.4997	- 66.4765	8.5046	- 2.0555	6.0027	8.6689
	θ_{oc}	- 0.3311	2.6008	55.9170	15.3823	8.5503	12.5308	-10.1401	4.6381
	θ_{ss}	-23.2604	3.6649	-91.7693	7.1537	-12.9172	- 5.1116	-13.8450	7.4174
	θ_{sc}	4.7043	- 8.0015	-37.9514	- 71.7419	6.5301	-16.8130	- 4.2184	-12.8505
	θ_{cs}	-25.0714	15.3009	-59.7492	-177.5673	41.5059	-80.7110	- 5.8153	-27.4052
	θ_{cc}	- 2.0059	- 7.7253	77.1483	- 7.0902	68.5358	26.5134	7.7451	-28.5566
Torsion 9.28 in.	θ_{os}	0.1891	0.0544	- 0.2460	0.5652	- 1.0733	0.2665	0.1925	0.0465
	θ_{oc}	0.0788	- 0.1531	- 0.1960	- 0.2328	- 0.6076	- 1.0110	0.0102	0.01822
	θ_{ss}	0.4975	0.2685	- 0.9271	- 1.5838	- 0.0498	1.4606	15.6374	13.1496
	θ_{sc}	- 0.6976	- 0.7498	3.0700	- 1.4345	- 1.0039	0.9952	-11.8807	15.1709
	θ_{cs}	0.8756	- 0.0250	- 1.5421	- 0.9968	- 1.9762	1.0423	-14.6088	21.3914
	θ_{cc}	- 0.8745	- 0.9375	2.1226	- 2.5792	- 1.3255	- 1.2713	-17.9657	-13.8937

TABLE C-XI

EFFECT OF VIBRATION COMPENSATION ON FLAPBENDING MOMENT (in-lb) AT 3.3 in. $\mu = 0.849$

n		cos $n\psi$	sin $n\psi$	Amplitude
2	W/O Vibration Control	-92.7652	17.2338	94.35
	Contribution of θ_o	- 0.0559	- 0.1536	
	θ_s	16.6165	15.2507	
	θ_c	19.2393	2.2002	
	TOTAL	-56.9653	34.5311	66.61
3	W/O Vibration Control	- 1.1732	-14.7883	14.83
	Contribution of θ_o	- 0.1248	- 0.5496	
	θ_s	- 9.2715	6.5928	
	θ_c	9.3862	9.3684	
	TOTAL	- 1.1833	0.6233	1.34
4	W/O Vibration Control	- 0.1403	- 3.5448	3.55
	Contribution of θ_o	0.1153	- 0.4152	
	θ_s	- 4.2868	- 8.5191	
	θ_c	0.3317	11.6713	
	TOTAL	- 3.9801	- 0.8078	4.06
5	W/O Vibration Control	3.2312	2.2658	3.95
	Contribution of θ_o	- 0.0370	0.0809	
	θ_s	20.8199	- 1.1807	
	θ_c	-23.7042	- 3.0926	
	TOTAL	0.3099	- 1.9266	1.95

TABLE C-XII

SUMMARY OF OSCILLATORY BLADE LOADS (IN-LB) WITHOUT AND WITH VIBRATION COMPENSATION

Operating Condition	μ	Flapbending at 3.3 in.				Flapbending at 13.15 in.				Chordbending at 2.4 in.				Torsion at 9.28 in.			
		n = 2	n = 3	n = 4	n = 5	n = 2	n = 3	n = 4	n = 5	n = 2	n = 3	n = 4	n = 5	n = 2	n = 3	n = 4	n = 5
Without Oscillatory Control Input	0.191	30.1	4.4	1.6	3.5	16.0	1.9	3.0	4.3	21.0	2.2	8.3	19.4	1.2	0.7	0.4	0.6
	0.239	10.5	0.6	0.2	0.9	5.3	1.7	0.9	1.2	4.6	2.0	11.0	2.6	0.5	0.2	0.3	0.2
	0.443	16.4	2.7	0.1	1.6	9.2	3.2	0.4	3.5	9.4	1.7	10.5	7.7	0.9	0.6	0.3	0.2
	0.849	94.4	14.8	3.6	4.0	55.9	3.6	9.5	5.9	31.5	31.4	13.1	14.6	6.8	4.1	0.9	0.3
	0.851	18.9	8.6	1.5	3.1	17.7	4.6	3.4	5.8	17.4	10.9	18.9	10.7	3.3	2.4	0.7	0.4
With Oscillatory Control Input	0.191	29.6	1.1	2.9	0.4	16.1	4.4	5.0	3.0	19.2	22.7	10.9	3.9	1.0	1.2	0.4	4.5
	0.239	10.3	0.4	0.3	0.7	5.3	1.9	0.8	1.5	4.7	3.0	11.5	2.1	0.5	0.3	0.3	1.2
	0.443	12.3	1.3	1.3	1.1	7.5	2.7	0.5	1.3	7.7	3.5	13.6	8.7	0.8	1.4	1.4	1.7
	0.849	66.6	1.3	4.1	2.0	41.7	1.3	2.4	2.1	15.7	68.8	38.9	22.3	6.5	4.4	0.8	3.1
	0.851	20.2	2.4	6.5	4.1	16.5	3.8	7.0	2.5	17.5	13.6	75.6	7.0	2.3	4.0	0.7	3.5

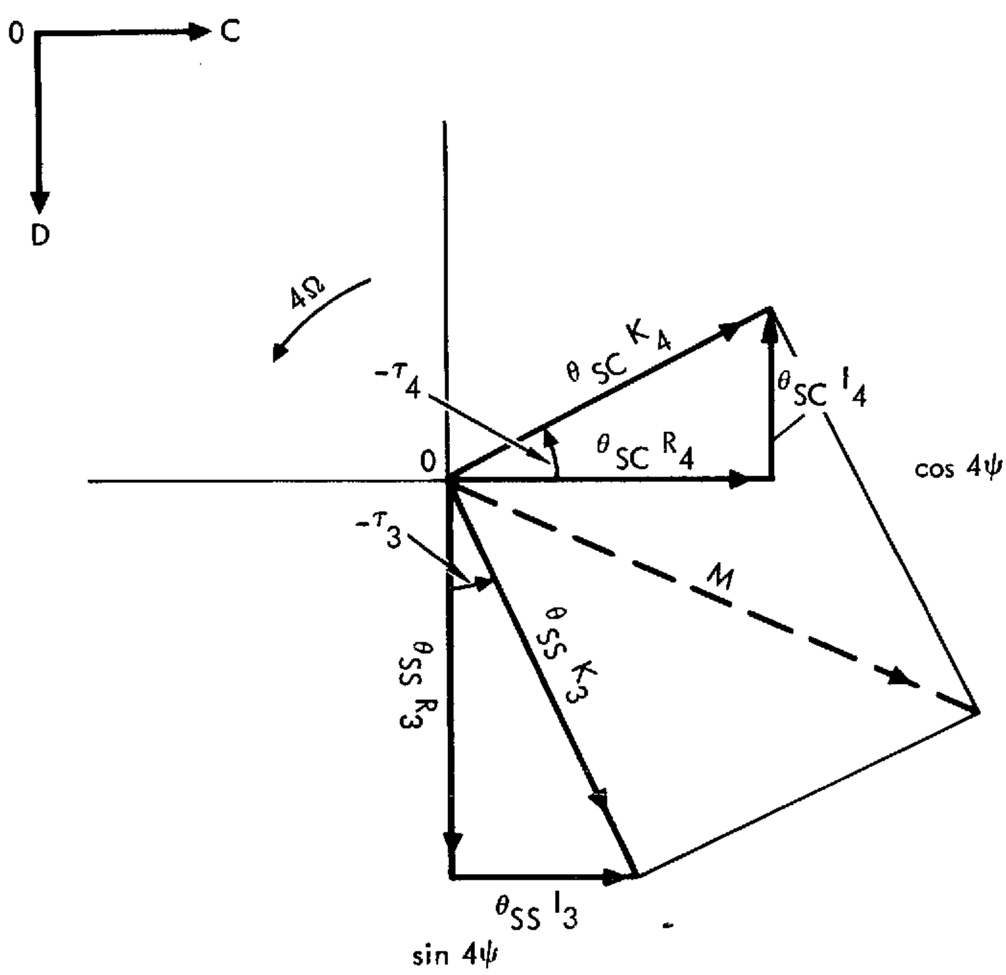

Figure C-1. Vector Diagram Showing Pitching Moment Due to θ_{ss} and θ_{sc} Control Applications.

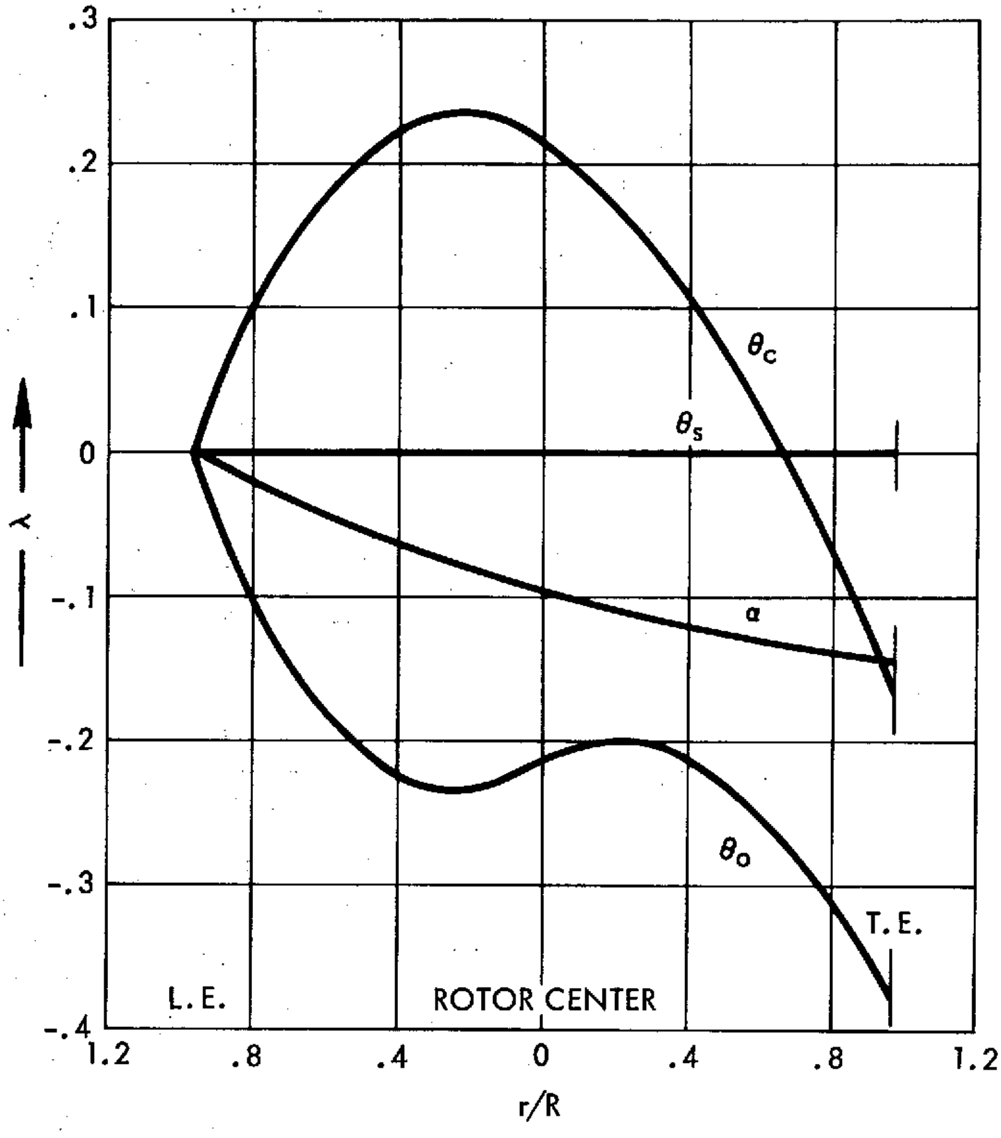

Figure C-2. Fore-Aft Distribution of Induced Flow per Unit Radian. μ = 0.191.

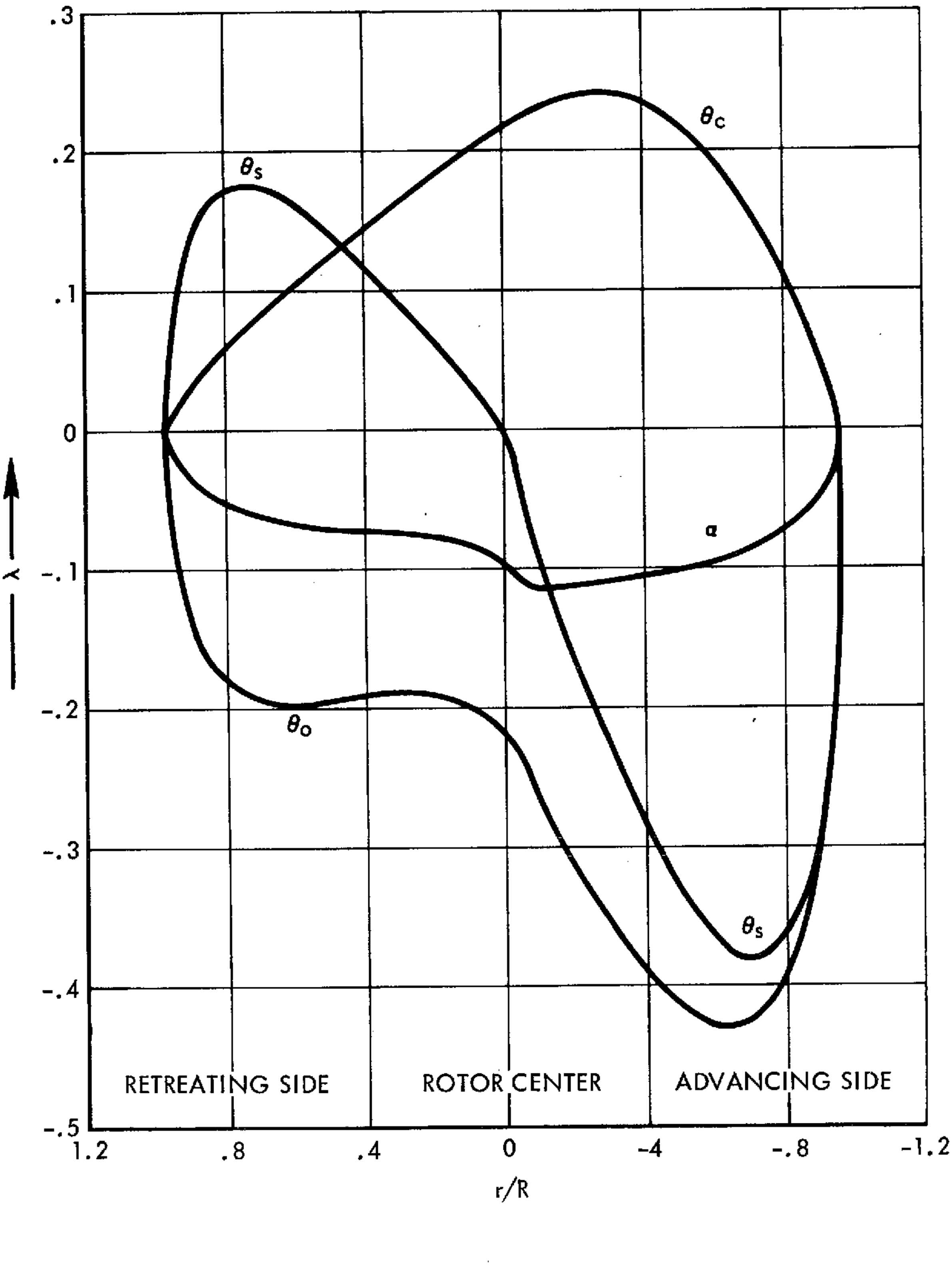

Figure C-3. Lateral Distribution of Induced Flow per Unit Radian. $\mu = 0.191$.